Seitz Notation for Symmetry Operations
of one-, two-, and three-dimensional Space Groups

Supplementary Material to

Seitz Notation for Symmetry Operations of Space Groups

Daniel B. Litvin
Department of Physics, Eberly College of Science
The Pennsylvania State University
PennState Berks, P.O.Box 7009, Reading, PA 19610-6009, U.S.A.
u3c@psu.edu

and

Vojtěch Kopský
Bajkalská 1170/28,100 00 Prague 10
Czech Republic
kopsky@centrum.cz

Contents

Contents

Symmetry Operations subtables for three-dimensional space groups

1 P1

(1) 1
(1|0,0,0)

2 $P\bar{1}$

(1) 1
(1|0,0,0)

(2) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

3 P2 UNIQUE AXIS b

(1) 1
(1|0,0,0)

(2) 2 0,y,0
(2_y|0,0,0)

3 P2 UNIQUE AXIS c

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

4 $P2_1$ UNIQUE AXIS b

(1) 1
(1|0,0,0)

(2) 2 (0,1/2,0) 0,y,0
(2_y|0,1/2,0)

4 $P2_1$ UNIQUE AXIS c

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

5 C2 UNIQUE AXIS b, CELL CHOICE 1

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,y,0
(2_y|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

5 C2 UNIQUE AXIS c, CELL CHOICE 1

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

6 Pm UNIQUE AXIS b

(1) 1 (2) m x,0,z
(1|0,0,0) (m_y|0,0,0)

6 Pm UNIQUE AXIS c

(1) 1 (2) m x,y,0
(1|0,0,0) (m_z|0,0,0)

7 Pc UNIQUE AXIS b, CELL CHOICE 1

(1) 1 (2) c x,0,z
(1|0,0,0) (m_y|0,0,1/2)

7 Pc UNIQUE AXIS c, CELL CHOICE 1

(1) 1 (2) a x,y,0
(1|0,0,0) (m_z|1/2,0,0)

8 Cm UNIQUE AXIS b, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (2) m x,0,z
(1|0,0,0) (m_y|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (2) a x,1/4,z
(1|1/2,1/2,0) (m_y|1/2,1/2,0)

8 Cm UNIQUE AXIS c, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (2) m x,y,0
(1|0,0,0) (m_z|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2) (2) b x,y,1/4
(1|0,1/2,1/2) (m_z|0,1/2,1/2)

9 Cc UNIQUE AXIS b, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (2) c x,0,z
(1|0,0,0) (m_y|0,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (2) n (1/2,0,1/2) x,1/4,z
(1|1/2,1/2,0) (m_y|1/2,1/2,1/2)

9 Cc UNIQUE AXIS c, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) a x,y,0 (m_z|1/2,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2) (1|0,1/2,1/2)
(2) n (1/2,1/2,0) x,y,1/4 (m_y|1/2,1/2,1/2)

10 P2/m UNIQUE AXIS b

(1) 1 (1|0,0,0)
(2) 2 0,y,0 (2_y|0,0,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) m x,0,z (m_y|0,0,0)

10 P2/m UNIQUE AXIS c

(1) 1 (1|0,0,0)
(2) 2 0,0,z (2_z|0,0,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) m x,y,0 (m_z|0,0,0)

11 $P2_1/m$ UNIQUE AXIS b

(1) 1 (1|0,0,0)
(2) 2 (0,1/2,0) 0,y,0 (2_y|0,1/2,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) m x,1/4,z (m_y|0,1/2,0)

11 $P2_1/m$ UNIQUE AXIS c

(1) 1 (1|0,0,0)
(2) 2 (0,0,1/2) 0,0,z (2_z|0,0,1/2)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) m x,y,1/4 (m_z|0,0,1/2)

12 C2/m UNIQUE AXIS b, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 0,y,0 (2_y|0,0,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) m x,0,z (m_y|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (1|1/2,1/2,0)
(2) 2 (0,1/2,0) 1/4,y,0 (2_y|1/2,1/2,0)
(3) $\bar{1}$ 1/4,1/4,0 ($\bar{1}$|1/2,1/2,0)
(4) a x,1/4,z (m_y|1/2,1/2,0)

12 C2/m UNIQUE AXIS c, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 0,0,z (2_z|0,0,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) m x,y,0 (m_z|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2) (1|0,1/2,1/2)
(2) 2 (0,0,1/2) 0,1/4,z (2_z|0,1/2,1/2)
(3) $\bar{1}$ 0,1/4,1/4 ($\bar{1}$|0,1/2,1/2)
(4) b x,y,1/4 (m_z|0,1/2,1/2)

13 P2/c UNIQUE AXIS b, CELL CHOICE 1

(1) 1 (1|0,0,0)
(2) 2 0,y,1/4 (2_y|0,0,1/2)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) c x,0,z (m_y|0,0,1/2)

13 P2/c UNIQUE AXIS c, CELL CHOICE 1

(1) 1 (1|0,0,0)
(2) 2 1/4,0,z (2_z|1/2,0,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) a x,y,0 (m_z|1/2,0,0)

14 $P2_1/c$ UNIQUE AXIS b, CELL CHOICE 1

(1) 1 (1|0,0,0)
(2) 2 (0,1/2,0) 0,y,1/4 (2_y|0,1/2,1/2)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) c x,1/4,z (m_y|0,1/2,1/2)

14 $P2_1/c$ UNIQUE AXIS c, CELL CHOICE 1

(1) 1 (1|0,0,0)
(2) 2 (0,0,1/2) 1/4,0,z (2_y|1/2,0,1/2)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) a x,y,1/4 (m_y|1/2,0,1/2)

15 C2/c UNIQUE AXIS b, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 0,y,1/4 (2_y|0,0,1/2)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) c x,0,z (m_y|0,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (1|1/2,1/2,0)
(2) 2 (0,1/2,0) 1/4,y,1/4 (2_y|1/2,1/2,1/2)
(3) $\bar{1}$ 1/4,1/4,0 ($\bar{1}$|1/2,1/2,0)
(4) n (1/2,0,1/2) x,1/4,z (m_y|1/2,1/2,1/2)

15 C2/c UNIQUE AXIS c, CELL CHOICE 1

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 1/4,0,z (2_z|1/2,0,0)
(3) $\bar{1}$ 0,0,0 ($\bar{1}$|0,0,0)
(4) a x,0,z (m_z|1/2,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2) (1|0,1/2,1/2)
(2) 2 (0,0,1/2) 1/4,1/4,z (2_z|1/2,1/2,1/2)
(3) $\bar{1}$ 0,1/4,1/4 ($\bar{1}$|0,1/2,1/2)
(4) n (1/2,1/2,0) x,y,1/4 (m_z|1/2,1/2,1/2)

16 P222

(1) 1 (1|0,0,0)
(2) 2 0,0,z (2_z|0,0,0)
(3) 2 0,y,0 (2_y|0,0,0)
(4) 2 x,0,0 (2_x|0,0,0)

17 $P222_1$

(1) 1 (1|0,0,0)
(2) 2 (0,0,1/2) 0,0,z (2_z|0,0,1/2)
(3) 2 0,y,1/4 (2_y|0,0,1/2)
(4) 2 x,0,0 (2_x|0,0,0)

18 $P2_12_12$

(1) 1 (1|0,0,0)
(2) 2 0,0,z (2_z|0,0,0)
(3) 2 (0,1/2,0) 1/4,y,0 (2_y|1/2,1/2,0)
(4) 2 (1/2,0,0) x,1/4,0 (2_x|1/2,1/2,0)

19 $P2_12_12_1$

(1) 1 (1|0,0,0)
(2) 2 (0,0,1/2) 1/4,0,z (2_z|1/2,0,1/2)
(3) 2 (0,1/2,0) 0,y,1/4 (2_y|0,1/2,1/2)
(4) 2 (1/2,0,0) x,1/4,0 (2_x|1/2,1/2,0)

20 $C222_1$

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 (0,0,1/2) 0,0,z (2_z|0,0,1/2)
(3) 2 0,y,1/4 (2_y|0,0,1/2)
(4) 2 x,0,0 (2_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (1|1/2,1/2,0)
(2) 2 (0,0,1/2) 1/4,1/4,z (2_z|1/2,1/2,1/2)
(3) 2 (0,1/2,0) 1/4,y,1/4 (2_y|1/2,1/2,1/2)
(4) 2 (1/2,0,0) x,1/4,0 (2_x|1/2,1/2,0)

21 C222

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 0,0,z (2_z|0,0,0)
(3) 2 0,y,0 (2_y|0,0,0)
(4) 2 x,0,0 (2_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (1|1/2,1/2,0)
(2) 2 1/4,1/4,z (2_z|1/2,1/2,0)
(3) 2 (0,1/2,0) 1/4,y,0 (2_y|1/2,1/2,0)
(4) 2 (1/2,0,0) x,1/4,0 (2_x|1/2,1/2,0)

22 F222

For (0,0,0) + set

(1) 1 (1|0,0,0)
(2) 2 0,0,z (2_z|0,0,0)
(3) 2 0,y,0 (2_y|0,0,0)
(4) 2 x,0,0 (2_x|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2) (1|0,1/2,1/2)
(2) 2 (0,0,1/2) 0,1/4,z (2_z|0,1/2,1/2)
(3) 2 (0,1/2,0) 0,y,1/4 (2_y|0,1/2,1/2)
(4) 2 x,1/4,1/4 (2_x|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2) (1|1/2,0,1/2)
(2) 2 (0,0,1/2) 1/4,0,z (2_z|1/2,0,1/2)
(3) 2 1/4,y,1/4 (2_y|1/2,0,1/2)
(4) 2 (1/2,0,0) x,0,1/4 (2_x|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (1|1/2,1/2,0)
(2) 2 1/4,1/4,z (2_z|1/2,1/2,0)
(3) 2 (0,1/2,0) 1/4,y,0 (2_y|1/2,1/2,0)
(4) 2 (1/2,0,0) x,1/4,0 (2_x|1/2,1/2,0)

23 I222

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

24 $I2_12_12_1$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 1/4,y,0
(2_y|1/2,0,0)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

25 Pmm2

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) m x,0,z
(m_y|0,0,0)

(4) m 0,y,z
(m_x|0,0,0)

26 $Pmc2_1$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) c x,0,z
(m_y|0,0,1/2)

(4) m 0,y,z
(m_x|0,0,0)

27 Pcc2

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) c x,0,z
(m_y|0,0,1/2)

(4) c 0,y,z
(m_x|0,0,1/2)

28 Pma2

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) a x,0,z
(m_y|1/2,0,0)

(4) m 1/4,y,z
(m_x|1/2,0,0)

29 $Pca2_1$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) a x,0,z
(m_y|1/2,0,0)

(4) c 1/4,y,z
(m_x|1/2,0,1/2)

30 Pnc2

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) c x,1/4,z
(m_y|0,1/2,1/2)

(4) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

31 $Pmn2_1$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(4) m 0,y,z
(m_x|0,0,0)

32 Pba2

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) a x,1/4,z
(m_y|1/2,1/2,0)

(4) b 1/4,y,z
(m_x|1/2,1/2,0)

33 $Pna2_1$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) a x,1/4,z
(m_y|1/2,1/2,0)

(4) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

34 Pnn2

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(4) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

35 Cmm2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) m x,0,z
(m_y|0,0,0)

(4) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) a x,1/4,z
(m_y|1/2,1/2,0)

(4) b 1/4,y,z
(m_x|1/2,1/2,0)

36 $Cmc2_1$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) c x,0,z
(m_y|0,0,1/2)

(4) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(4) b 1/4,y,z
(m_x|1/2,1/2,0)

37 Ccc2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) c x,0,z
(m_y|0,0,1/2)

(4) c 0,y,z
(m_x|0,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(4) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

38 Amm2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) m x,0,z
(m_y|0,0,0)

(4) m 0,y,z
(m_x|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) c x,1/4,z
(m_y|0,1/2,1/2)

(4) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

39 Aem2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) m x,1/4,z
(m_y|0,1/2,0)

(4) b 0,y,z
(m_x|0,1/2,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) c x,0,z
(m_y|0,0,1/2)

(4) c 0,y,z
(m_x|0,0,1/2)

40 Ama2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) a x,0,z
(m_y|1/2,0,0)

(4) m 1/4,y,z
(m_x|1/2,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(4) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

41 Aea2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) a x,1/4,z
(m_y|1/2,1/2,0)

(4) b 1/4,y,z
(m_x|1/2,1/2,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(4) c 1/4,y,z
(m_x|1/2,0,1/2)

42 Fmm2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) m x,0,z
(m_y|0,0,0)

(4) m 0,y,z
(m_x|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) c x,1/4,z
(m_y|0,1/2,1/2)

(4) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(4) c 1/4,y,z
(m_x|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) a x,1/4,z
(m_y|1/2,1/2,0)

(4) b 1/4,y,z
(m_x|1/2,1/2,0)

43 Fdd2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) d (1/4,0,1/4) x,1/8,z
(m_y|1/4,1/4,1/4)

(4) d (0,1/4,1/4) 1/8,y,z
(m_x|1/4,1/4,1/4)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) d (1/4,0,3/4) x,3/8,z
(m_y|1/4,3/4,3/4)

(4) d (0,3/4,3/4) 1/8,y,z
(m_x|1/4,3/4,3/4)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) d (3/4,0,3/4) x,1/8,z
(m_y|3/4,1/4,3/4)

(4) d (0,1/4,3/4) 3/8,y,z
(m_x|3/4,1/4,3/4)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) d (3/4,0/1,4) x,3/8,z
(m_y|3/4,3/4,1/4)

(4) d (0,3/4,1/4) 3/8,y,z
(m_x|3/4,3/4,1/4)

44 Imm2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) m x,0,z
(m_y|0,0,0)

(4) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(4) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

45 Iba2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) a x,1/4,z
(m_y|1/2,1/2,0)

(4) b 1/4,y,z
(m_x|1/2,1/2,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) c x,0,z
(m_y|0,0,1/2)

(4) c 0,y,z
(m_x|0,0,1/2)

46 Ima2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) a x,0,z
(m_y|1/2,0,0)

(4) m 1/4,y,z
(m_x|1/2,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) c x,1/4,z
(m_y|0,1/2,1/2)

(4) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

47 Pmmm

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) m x,0,z
(m_y|0,0,0)

(8) m 0,y,z
(m_x|0,0,0)

48 Pnnn ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

48 Pnnn ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(8) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

49 Pccm

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

(5) $\bar{1}$
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) c x,0,z
(m_y|0,0,1/2)

(8) c 0,y,z
(m_x|0,0,1/2)

50 Pban ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) a x,1/4,z
(m_y|1/2,1/2,0)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

50 Pban ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 1/4,y,0
(2_y|1/2,0,0)

(4) 2 x,1/4,0
(2_x|0,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) a x,0,z
(m_y|1/2,0,0)

(8) b 1/4,y,z
(m_x|0,1/2,0)

51 Pmma

(1) 1
(1|0,0,0)

(2) 2 1/4,0,z
(2_z|1/2,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 (1/2,0,0) x,0,0
(2_x|1/2,0,0)

(5) $\bar{1}$
($\bar{1}$|0,0,0)

(6) a x,y,0
(m_z|1/2,0,0)

(7) m x,0,z
(m_y|0,0,0)

(8) m 1/4,y,z
(m_x|1/2,0,0)

52 Pnna

(1) 1
(1|0,0,0)

(2) 2 1/4,0,z
(2_z|1/2,0,0)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,0
(m_z|1/2,0,0)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

53 Pmna

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(8) m 0,y,z
(m_x|0,0,0)

54 Pcca

(1) 1
(1|0,0,0)

(2) 2 1/4,0,z
(2_z|1/2,0,0)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,0
(m_z|1/2,0,0)

(7) c x,0,z
(m_y|0,0,1/2)

(8) c 1/4,y,z
(m_x|1/2,0,1/2)

55 Pbam

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) a x,1/4,z
(m_y|1/2,1/2,0)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

56 Pccn

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) c 1/4,y,z
(m_x|1/2,0,1/2)

57 Pbcm

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,0
(2_x|0,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,1/4
(m_z|0,0,1/2)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) b 0,y,z
(m_x|0,1/2,0)

58 Pnnm

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

59 Pmmn ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) m x,0,z
(m_y|0,0,0)

(8) m 0,y,z
(m_x|0,0,0)

59 Pmmn ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 0,y,0
(2_y|0,1/2,0)

(4) 2 (1/2,0,0) x,0,0
(2_x|1/2,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) m x,1/4,z
(m_y|0,1/2,0)

(8) m 1/4,y,z
(m_x|1/2,0,0)

60 Pbcn

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) c x,0,z
(m_y|0,0,1/2)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

61 Pbca

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

62 Pnma

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,0
(2_y|0,1/2,0)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) m x,1/4,z
(m_y|0,1/2,0)

(8) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

63 Cmcm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,1/4
(m_z|0,0,1/2)

(7) c x,0,z
(m_y|0,0,1/2)

(8) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

64 Cmce

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) b x,y,1/4
(m_z|0,1/2,1/2)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

65 Cmmm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) m x,0,z
(m_y|0,0,0)

(8) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) a x,1/4,z
(m_y|1/2,1/2,0)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

66 Cccm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) c x,0,z
(m_y|0,0,1/2)

(8) c 0,y,z
(m_x|0,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

67 Cmma

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 (0,1/2,0) 0,y,0
(2_y|0,1/2,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) b x,y,0
(m_z|0,1/2,0)

(7) m x,1/4,z
(m_y|0,1/2,0)

(8) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,0,z
(2_z|1/2,0,0)

(3) 2 1/4,y,0
(2_y|1/2,0,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) a x,y,0
(m_z|1/2,0,0)

(7) a x,0,z
(m_y|1/2,0,0)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

68 Ccce ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 0,1/4,1/4
($\bar{1}$|0,1/2,1/2)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) c 1/4,y,z
(m_x|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 1/4,0,1/4
($\bar{1}$|1/2,0,1/2)

(6) b x,y,1/4
(m_z|0,1/2,1/2)

(7) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(8) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

68 Ccce ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 1/4,0,z
(2_z|1/2,0,0)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,0
(m_z|1/2,0,0)

(7) c x,0,z
(m_y|0,0,1/2)

(8) c 1/4,y,z
(m_x|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) b x,y,0
(m_z|0,1/2,0)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

69 Fmmm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) m x,0,z
(m_y|0,0,0)

(8) m 0,y,z
(m_x|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) $\bar{1}$ 0,1/4,1/4
($\bar{1}$|0,1/2,1/2)

(6) b x,y,1/4
(m_z|0,1/2,1/2)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) $\bar{1}$ 1/4,0,1/4
($\bar{1}$|1/2,0,1/2)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(8) c 1/4,y,z
(m_x|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) a x,1/4,z
(m_y|1/2,1/2,0)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

70 Fddd ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 1/8,1/8,1/8
($\bar{1}$|1/4,1/4,1/4)

(6) d (1/4,1/4,0) x,y,1/8
(m_z|1/4,1/4,1/4)

(7) d (1/4,0,1/4) x,1/8,z
(m_y|1/4,1/4,1/4)

(8) d (0,1/4,1/4) 1/8,y,z
(m_x|1/4,1/4,1/4)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) $\bar{1}$ 1/8,3/8,3/8
($\bar{1}$|1/4,3/4,3/4)

(6) d (1/4,3/4,0) x,y,3/8
(m_z|1/4,3/4,3/4)

(7) d (1/4,0,1/4) x,3/8,z
(m_y|1/4,3/4,3/4)

(8) d (0,3/4,3/4) 1/8,y,z
(m_x|1/4,3/4,3/4)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) $\bar{1}$ 3/8,1/8,3/8
($\bar{1}$|3/4,1/4,3/4)

(6) d (3/4,1/4,0) x,y,3/8
(m_z|3/4,1/4,3/4)

(7) d (3/4,0,3/4) x,1/8,z
(m_y|3/4,1/4,3/4)

(8) d (0,1/4,3/4) 3/8,y,z
(m_x|3/4,1/4,3/4)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 3/8,3/8,1/8
($\bar{1}$|3/4,3/4,1/4)

(6) d (3/4,3/4,0) x,y,1/8
(m_z|3/4,3/4,1/4)

(7) d (3/4,0,1/4) x,3/8,z
(m_y|3/4,3/4,1/4)

(8) d (0,3/4,1/4) 3/8,y,z
(m_x|3/4,3/4,1/4)

70 Fddd ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 3/8,3/8,z
(2_z|3/4,3/4,0)

(3) 2 3/8,y,3/8
(2_y|3/4,0,3/4)

(4) 2 x,3/8,3/8
(2_x|0,3/4,3/4)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) d (1/4,1/4,0) x,y,0
(m_z|1/4,1/4,0)

(7) d (1/4,0,1/4) x,0,z
(m_y|1/4,0,1/4)

(8) d (0,1/4,1/4) 0,y,z
(m_x|0,1/4,1/4)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 3/8,1/8,z
(2_z|3/4,1/4,1/2)

(3) 2 (0,1/2,0) 3/8,y,1/8
(2_y|3/4,1/2,1/4)

(4) 2 x,1/8,1/8
(2_x|0,1/4,1/4)

(5) $\bar{1}$ 0,1/4,1/4
($\bar{1}$|0,1/2,1/2)

(6) d (1/4,3/4,0) x,y,1/4
(m_z|1/4,3/4,1/2)

(7) d (1/4,0,3/4) x,1/4,z
(m_y|1/4,1/2,3/4)

(8) d (0,3/4,3/4) 0,y,z
(m_x|0,3/4,3/4)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/8,3/8,z
(2_z|1/4,3/4,1/2)

(3) 2 1/8,y,1/8
(2_y|1/4,0,1/4)

(4) 2 (1/2,0,0) x,3/8,1/8
(2_x|1/2,3/4,1/4)

(5) $\bar{1}$ 1/4,0,1/4
($\bar{1}$|1/2,0,1/2)

(6) d (3/4,1/4,0) x,y,1/4
(m_z|3/4,1/4,1/2)

(7) d (3/4,0,3/4) x,0,z
(m_y|3/4,0,3/4)

(8) d (0,1/4,3/4) 1/4,y,z
(m_x|1/2,1/4,3/4)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/8,1/8,z
(2_z|1/4,1/4,0)

(3) 2 (0,1/2,0) 1/8,y,3/8
(2_y|1/4,1/2,3/4)

(4) 2 (1/2,0,0) x,1/8,3/8
(2_x|1/2,1/4,3/4)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) d (3/4,3/4,0) x,y,0
(m_z|3/4,3/4,0)

(7) d (3/4,0,1/4) x,1/4,z
(m_y|3/4,1/2,1/4)

(8) d (0,3/4,1/4) 1/4,y,z
(m_x|1/2,3/4,1/4)

71 Immm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) m x,0,z
(m_y|0,0,0)

(8) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(8) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

72 Ibam

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) a x,1/4,z
(m_y|1/2,1/2,0)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 0,y,1/4
(2_y|0,0,1/2)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) c x,0,z
(m_y|0,0,1/2)

(8) c 0,y,z
(m_x|0,0,1/2)

73 Ibca

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) c x,1/4,z
(m_y|0,1/2,1/2)

(8) b 1/4,y,z
(m_x|1/2,1/2,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 1/4,y,0
(2_y|1/2,0,0)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) b x,y,0
(m_z|0,1/2,0)

(7) a x,0,z
(m_y|1/2,0,0)

(8) c 0,y,z
(m_x|0,0,1/2)

74 Imma

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 (0,1/2,0) 0,y,0
(2_y|0,1/2,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) b x,y,0
(m_z|0,1/2,0)

(7) m x,1/4,z
(m_y|0,1/2,0)

(8) m 0,y,z
(m_x|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(8) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

75 P4

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

76 $P4_1$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 4^+ (0,0,1/4) 0,0,z
(4_z|0,0,1/4)

(4) 4^- (0,0,3/4) 0,0,z
(4_z^{-1}|0,0,3/4)

77 $P4_2$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,1/2) 0,0,z
(4_z|0,0,1/2)

(4) 4^- (0,0,1/2) 0,0,z
(4_z^{-1}|0,0,1/2)

78 $P4_3$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 4^+ (0,0,3/4) 0,0,z
(4_z|0,0,3/4)

(4) 4^- (0,0,1/4) 0,0,z
(4_z^{-1}|0,0,1/4)

79 I4

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

80 $I4_1$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
(4_z|0,1/2,1/4)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
(4_z^{-1}|1/2,0,3/4)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,1/4,z
(4_z^{-1}|0,1/2,1/4)

81 $P\bar{4}$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

82 $I\bar{4}$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(4) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

83 P4/m

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(8) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

84 $P4_2/m$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,1/2) 0,0,z
(4_z|0,0,1/2)

(4) 4^- (0,0,1/2) 0,0,z
(4_z^{-1}|0,0,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) $\bar{4}^+$ 0,0,z; 0,0,1/4
($\bar{4}_z$|0,0,1/2)

(8) $\bar{4}^-$ 0,0,z; 0,0,1/4
($\bar{4}_z^{-1}$|0,0,1/2)

85 P4/n ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,1/2,z
(4_z|1/2,1/2,0)

(4) 4^- 1/2,0,z
(4_z^{-1}|1/2,1/2,0)

(5) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(8) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

85 P4/n ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(4) 4^- 1/4,1/4,z
(4_z^{-1}|0,1/2,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(8) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,0,0)

86 $P4_2/n$ ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(8) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

86 $P4_2/n$ ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 4^+ (0,0,1/2) -1/4,1/4,z
(4_z|0,1/2,1/2)

(4) 4^- (0,0,1/2) 1/4,-1/4,z
(4_z^{-1}|1/2,0,1/2)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(7) $\bar{4}^+$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z$|0,1/2,1/2)

(8) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z^{-1}$|0,0,0)

87 I4/m

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) m x,y,0
(m_z|0,0,0)

(7) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(8) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(7) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(8) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

88 $I4_1/a$ ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
(4_z|0,1/2,1/4)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
(4_z^{-1}|1/2,0,3/4)

(5) $\bar{1}$ 0,1/4,1/8
($\bar{1}$|0,1/2,1/4)

(6) a x,y,3/8
(m_z|1/2,0,3/4)

(7) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(8) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,1/4,z
(4_z^{-1}|0,1/2,1/4)

(5) $\bar{1}$ 1/4,0,3/8
($\bar{1}$|1/2,0,3/4)

(6) b x,y,1/8
(m_z|0,1/2,1/4)

(7) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(8) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

88 $I4_1/a$ ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 4^+ (0,0,1/4) 1/4,1/2,z
(4_z|3/4,1/4,1/4)

(4) 4^- (0,0,3/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,3/4)

(5) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(6) a x,y,1/4
(m_z|1/2,0,1/2)

(7) $\bar{4}^+$ 1/2,1/4,z; 1/2,1/4,3/8
($\bar{4}_z$|1/4,3/4,3/4)

(8) $\bar{4}^-$ 0,1/4,z; 0,1/4,1/8
($\bar{4}_z^{-1}$|1/4,1/4,1/4)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,1/4,z
(2_z|0,0,0)

(3) 4^+ (0,0,3/4) -1/4,1/2,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,0,z
(4_z^{-1}|0,1/2,1/4)

(5) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(6) b x,y,0
(m_z|0,1/2,0)

(7) $\bar{4}^+$ 1/2,-1/4,z; 1/2,-1/4,1/8
($\bar{4}_z$|3/4,1/4,1/4)

(8) $\bar{4}^-$ 0,3/4,z; 0,3/4,3/8
($\bar{4}_z^{-1}$|3/4,3/4,3/4)

89 P422

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\overline{x}$,0
($2_{\overline{x}y}$|0,0,0)

90 $P42_12$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,1/2,z
(4_z|1/2,1/2,0)

(4) 4^- 1/2,0,z
(4_z^{-1}|1/2,1/2,0)

(5) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(6) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\overline{x}$,0
($2_{\overline{x}y}$|0,0,0)

91 $P4_122$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 4^+ (0,0,1/4) 0,0,z
(4_z|0,0,1/4)

(4) 4^- (0,0,3/4) 0,0,z
(4_z^{-1}|0,0,3/4)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,1/4
(2_x|0,0,1/2)

(7) 2 x,x,3/8
(2_{xy}|0,0,3/4)

(8) 2 x,$\overline{x}$,1/8
($2_{\overline{x}y}$|0,0,1/4)

92 $P4_12_12$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 4^+ (0,0,1/4) 0,1/2,z
(4_z|1/2,1/2,1/4)

(4) 4^- (0,0,3/4) 1/2,0,z
(4_z^{-1}|1/2,1/2,3/4)

(5) 2 (0,1/2,0) 1/4,y,1/8
(2_y|1/2,1/2,1/4)

(6) 2 (1/2,0,0) x,1/4,3/8
(2_x|1/2,1/2,3/4)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\overline{x}$,1/4
($2_{\overline{x}y}$|0,0,1/2)

93 $P4_222$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,1/2) 0,0,z
(4_z|0,0,1/2)

(4) 4^- (0,0,1/2) 0,0,z
(4_z^{-1}|0,0,1/2)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(8) 2 x,$\overline{x}$,1/4
($2_{\overline{x}y}$|0,0,1/2)

94 $P4_22_12$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(5) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(6) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\overline{x}$,0
($2_{\overline{x}y}$|0,0,0)

95 $P4_322$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 4^+ (0,0,3/4) 0,0,z
(4_z|0,0,3/4)

(4) 4^- (0,0,1/4) 0,0,z
(4_z^{-1}|0,0,1/4)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,1/4
(2_x|0,0,1/2)

(7) 2 x,x,1/8
(2_{xy}|0,0,1/4)

(8) 2 x,$\overline{x}$,3/8
($2_{\overline{x}y}$|0,0,3/4)

96 $P4_32_12$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(3) 4^+ (0,0,3/4) 0,1/2,z
(4_z|1/2,1/2,3/4)

(4) 4^- (0,0,1/4) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/4)

(5) 2 (0,1/2,0) 1/4,y,3/8
(2_y|1/2,1/2,3/4)

(6) 2 (1/2,0,0) x,1/4,1/8
(2_x|1/2,1/2,1/4)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}$|0,0,1/2)

97 I422

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(5) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(6) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(7) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

98 $I4_122$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
(4_z|0,1/2,1/4)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
(4_z^{-1}|1/2,0,3/4)

(5) 2 1/4,y,3/8
(2_y|1/2,0,3/4)

(6) 2 x,1/4,1/8
(2_x|0,1/2,1/4)

(7) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,1/4,z
(4_z^{-1}|0,1/2,1/4)

(5) 2 (0,1/2,0) 0,y,1/8
(2_y|0,1/2,1/4)

(6) 2 (1/2,0,0) x,0,3/8
(2_x|1/2,0,3/4)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

99 P4mm

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) m x,0,z
(m_y|0,0,0)

(6) m 0,y,z
(m_x|0,0,0)

(7) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(8) m x,x,z
($m_{\bar{x}y}$|0,0,0)

100 P4bm

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ 0,0,z
$(4_z|0,0,0)$

(4) 4^- 0,0,z
$(4_z^{-1}|0,0,0)$

(5) a x,1/4,z
$(m_y|1/2,1/2,0)$

(6) b 1/4,y,z
$(m_x|1/2,1/2,0)$

(7) m x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,0)$

(8) g (1/2,1/2,0) x,x,z
$(m_{\bar{x}y}|1/2,1/2,0)$

101 $P4_2cm$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,0,z
$(4_z|0,0,1/2)$

(4) 4^- (0,0,1/2) 0,0,z
$(4_z^{-1}|0,0,1/2)$

(5) c x,0,z
$(m_y|0,0,1/2)$

(6) c 0,y,z
$(m_x|0,0,1/2)$

(7) m x,$\bar{x}$,z
$(m_{xy}|0,0,0)$

(8) m x,x,z
$(m_{\bar{x}y}|0,0,0)$

102 $P4_2nm$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,1/2,z
$(4_z|1/2,1/2,1/2)$

(4) 4^- (0,0,1/2) 1/2,0,z
$(4_z^{-1}|1/2,1/2,1/2)$

(5) n (1/2,0,1/2) x,1/4,z
$(m_y|1/2,1/2,1/2)$

(6) n (0,1/2,1/2) 1/4,y,z
$(m_x|1/2,1/2,1/2)$

(7) m x,$\bar{x}$,z
$(m_{xy}|0,0,0)$

(8) m x,x,z
$(m_{\bar{x}y}|0,0,0)$

103 P4cc

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ 0,0,z
$(4_z|0,0,0)$

(4) 4^- 0,0,z
$(4_z^{-1}|0,0,0)$

(5) c x,0,z
$(m_y|0,0,1/2)$

(6) c 0,y,z
$(m_x|0,0,1/2)$

(7) c x,$\bar{x}$,z
$(m_{xy}|0,0,1/2)$

(8) c x,x,z
$(m_{\bar{x}y}|0,0,1/2)$

104 P4nc

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ 0,0,z
$(4_z|0,0,0)$

(4) 4^- 0,0,z
$(4_z^{-1}|0,0,0)$

(5) n (1/2,0,1/2) x,1/4,z
$(m_y|1/2,1/2,1/2)$

(6) n (0,1/2,1/2) 1/4,y,z
$(m_x|1/2,1/2,1/2)$

(7) c x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,1/2)$

(8) n (1/2,1/2,1/2) x,x,z
$(m_{\bar{x}y}|1/2,1/2,1/2)$

105 $P4_2mc$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,0,z
$(4_z|0,0,1/2)$

(4) 4^- (0,0,1/2) 0,0,z
$(4_z^{-1}|0,0,1/2)$

(5) m x,0,z
$(m_y|0,0,0)$

(6) m 0,y,z
$(m_x|0,0,0)$

(7) c x,$\bar{x}$,z
$(m_{xy}|0,0,1/2)$

(8) c x,x,z
$(m_{\bar{x}y}|0,0,1/2)$

106 $P4_2bc$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,0,z
$(4_z|0,0,1/2)$

(4) 4^- (0,0,1/2) 0,0,z
$(4_z^{-1}|0,0,1/2)$

(5) a x,1/4,z
$(m_y|1/2,1/2,0)$

(6) b 1/4,y,z
$(m_x|1/2,1/2,0)$

(7) c x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,1/2)$

(8) n (1/2,1/2,1/2) x,x,z
$(m_{\bar{x}y}|1/2,1/2,1/2)$

107 I4mm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) m x,0,z
(m_y|0,0,0)

(6) m 0,y,z
(m_x|0,0,0)

(7) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(8) m x,x,z
($m_{\bar{x}y}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(5) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(6) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(7) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(8) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

108 I4cm

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) c x,0,z
(m_y|0,0,1/2)

(6) c 0,y,z
(m_x|0,0,1/2)

(7) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(8) c x,x,z
($m_{\bar{x}y}$|0,0,1/2)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(4) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(5) a x,1/4,z
(m_y|1/2,1/2,0)

(6) b 1/4,y,z
(m_x|1/2,1/2,0)

(7) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(8) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

109 $I4_1md$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
(4_z|0,1/2,1/4)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
(4_z^{-1}|1/2,0,3/4)

(5) m x,0,z
(m_y|0,0,0)

(6) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(7) d (-1/4,1/4,1/4) x+1/4,$\bar{x}$,z
(m_{xy}|0,1/2,1/4)

(8) d (1/4,1/4,3/4) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,3/4)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,1/4,z
(4_z^{-1}|0,1/2,1/4)

(5) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(6) m 0,y,z
(m_x|0,0,0)

(7) d (1/4,-1/4,3/4) x+1/4,$\bar{x}$,z
(m_{xy}|1/2,0,3/4)

(8) d (1/4,1/4,1/4) x-1/4,x,z
($m_{\bar{x}y}$|0,1/2,1/4)

110 $I4_1cd$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
(4_z|0,1/2,1/4)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
(4_z^{-1}|1/2,0,3/4)

(5) c x,0,z
(m_y|0,0,1/2)

(6) b 1/4,y,z
(m_x|1/2,1/2,0)

(7) d (-1/4,1/4,3/4) x+1/4,$\bar{x}$,z

(8) d (1/4,1/4,1/4) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,1/4)

(m_{xy}|0,1/2,3/4)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,1/4,z
(4_z^{-1}|0,1/2,1/4)

(5) a x,1/4,z
(m_y|1/2,1/2,0)

(6) c 0,y,z
(m_x|0,0,1/2)

(7) d (1/4,-1/4,1/4) x+1/4,$\bar{x}$,z

(8) d (1/4,1/4,3/4) x-1/4,x,z
($m_{\bar{x}y}$|0,1/2,3/4)

(m_{xy}|1/2,0,1/4)

111 $P\bar{4}2m$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(8) m x,x,z
($m_{\bar{x}y}$|0,0,0)

112 $P\bar{4}2c$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(5) 2 0,y,1/4
(2_y|0,0,1/2)

(6) 2 x,0,1/4
(2_x|0,0,1/2)

(7) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(8) c x,x,z
($m_{\bar{x}y}$|0,0,1/2)

113 $P\bar{4}2_1m$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(5) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(6) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(7) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(8) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

114 $P\bar{4}2_1c$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(5) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(6) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(7) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(8) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

115 P$\bar{4}$m2

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) m x,0,z
($m_y|0,0,0$)

(6) m 0,y,z
($m_x|0,0,0$)

(7) 2 x,x,0
($2_{xy}|0,0,0$)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}|0,0,0$)

116 P$\bar{4}$c2

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) c x,0,z
($m_y|0,0,1/2$)

(6) c 0,y,z
($m_x|0,0,1/2$)

(7) 2 x,x,1/4
($2_{xy}|0,0,1/2$)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}|0,0,1/2$)

117 P$\bar{4}$b2

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) a x,1/4,z
($m_y|1/2,1/2,0$)

(6) b 1/4,y,z
($m_x|1/2,1/2,0$)

(7) 2 (1/2,1/2,0) x,x,0
($2_{xy}|1/2,1/2,0$)

(8) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}|1/2,1/2,0$)

118 P$\bar{4}$n2

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) n (1/2,0,1/2) x,1/4,z
($m_y|1/2,1/2,1/2$)

(6) n (0,1/2,1/2) 1/4,y,z
($m_x|1/2,1/2,1/2$)

(7) 2 (1/2,1/2,0) x,x,1/4
($2_{xy}|1/2,1/2,1/2$)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}|1/2,1/2,1/2$)

119 I$\bar{4}$m2

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) m x,0,z
($m_y|0,0,0$)

(6) m 0,y,z
($m_x|0,0,0$)

(7) 2 x,x,0
($2_{xy}|0,0,0$)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}|0,0,0$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(4) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(5) n (1/2,0,1/2) x,1/4,z
($m_y|1/2,1/2,1/2$)

(6) n (0,1/2,1/2) 1/4,y,z
($m_x|1/2,1/2,1/2$)

(7) 2 (1/2,1/2,0) x,x,1/4
($2_{xy}|1/2,1/2,1/2$)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}|1/2,1/2,1/2$)

120 I$\bar{4}$c2

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) c x,0,z
($m_y|0,0,1/2$)

(6) c 0,y,z
($m_x|0,0,1/2$)

(7) 2 x,x,1/4
($2_{xy}|0,0,1/2$)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}|0,0,1/2$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(4) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(5) a x,1/4,z
($m_y|1/2,1/2,0$)

(6) b 1/4,y,z
($m_x|1/2,1/2,0$)

(7) 2 (1/2,1/2,0) x,x,0
($2_{xy}|1/2,1/2,0$)

(8) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}|1/2,1/2,0$)

121 I$\bar{4}$2m

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) 2 0,y,0
($2_y|0,0,0$)

(6) 2 x,0,0
($2_x|0,0,0$)

(7) m x,$\bar{x}$,z
($m_{xy}|0,0,0$)

(8) m x,x,z
($m_{\bar{x}y}|0,0,0$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(4) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(5) 2 (0,1/2,0) 1/4,y,1/4
($2_y|1/2,1/2,1/2$)

(6) 2 (1/2,0,0) x,1/4,1/4
($2_x|1/2,1/2,1/2$)

(7) c x+1/2,$\bar{x}$,z
($m_{xy}|1/2,1/2,1/2$)

(8) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}|1/2,1/2,1/2$)

122 I$\bar{4}$2d

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(5) 2 1/4,y,3/8
($2_y|1/2,0,3/4$)

(6) 2 (1/2,0,0) x,0,3/8
($2_x|1/2,0,3/4$)

(7) d (1/4,-1/4,3/4) x+1/4,$\bar{x}$,z
($m_{xy}|1/2,0,3/4$)

(8) d (1/4,1/4,3/4) x+1/4,x,z
($m_{\bar{x}y}|1/2,0,3/4$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(4) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(5) 2 (0,1/2,0) 0,y,1/8
($2_y|0,1/2,1/4$)

(6) 2 x,1/4,1/8
($2_x|0,1/2,1/4$)

(7) d (-1/4,1/4,1/4) x+1/4,$\bar{x}$,z
($m_{xy}|0,1/2,1/4$)

(8) d (1/4,1/4,1/4) x-1/4,x,z
($m_{\bar{x}y}|0,1/2,1/4$)

123 P4/mmm

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) m x,y,0
(m_z|0,0,0)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) m x,0,z
(m_y|0,0,0)

(14) m 0,y,z
(m_x|0,0,0)

(15) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(16) m x,x,z
($m_{\bar{x}y}$|0,0,0)

124 P4/mcc

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 0,y,1/4
(2_y|0,0,1/2)

(6) 2 x,0,1/4
(2_x|0,0,1/2)

(7) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}$|0,0,1/2)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) m x,y,0
(m_z|0,0,0)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) c x,0,z
(m_y|0,0,1/2)

(14) c 0,y,z
(m_x|0,0,1/2)

(15) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(16) c x,x,z
($m_{\bar{x}y}$|0,0,1/2)

125 P4/nbm ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(9) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,0
($\bar{4}_z$|1/2,1/2,0)

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,0
($\bar{4}_z^{-1}$|1/2,1/2,0)

(13) a x,1/4,z
(m_y|1/2,1/2,0)

(14) b 1/4,y,z
(m_x|1/2,1/2,0)

(15) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(16) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

125 P4/nbm ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(4) 4^- 1/4,1/4,z
(4_z^{-1}|0,1/2,0)

(5) 2 1/4,y,0
(2_y|1/2,0,0)

(6) 2 x,1/4,0
(2_x|0,1/2,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}$|1/2,1/2,0)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,1/2,0)

(13) a x,0,z
(m_y|1/2,0,0)

(14) b 0,y,z
(m_x|0,1/2,0)

(15) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(16) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

126 P4/nnc ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 0,y,0
(2_y|0,0,0)

(6) 2 x,0,0
(2_x|0,0,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(9) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(10) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(13) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(14) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(15) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(16) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

126 P4/nnc ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(4) 4^- 1/4,1/4,z
(4_z^{-1}|0,1/2,0)

(5) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(6) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(7) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,1/2,0)

(13) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(14) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

(15) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(16) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

127 P4/mbm

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(6) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(7) 2 (1/2,1/2,0) x,x,0
(2_{xy}|1/2,1/2,0)

(8) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}$|1/2,1/2,0)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) m x,y,0
(m_z|0,0,0)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) a x,1/4,z
(m_y|1/2,1/2,0)

(14) b 1/4,y,z
(m_x|1/2,1/2,0)

(15) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(16) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

128 P4/mnc

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,0,z
(4_z|0,0,0)

(4) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(5) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(6) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(7) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) m x,y,0
(m_z|0,0,0)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(14) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(15) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(16) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

129 P4/nmm ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,1/2,z
(4_z|1/2,1/2,0)

(4) 4^- 1/2,0,z
(4_z^{-1}|1/2,1/2,0)

(5) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(6) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(9) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) m x,0,z
(m_y|0,0,0)

(14) m 0,y,z
(m_x|0,0,0)

(15) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(16) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

129 P4/nmm ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(4) 4^- 1/4,1/4,z
(4_z^{-1}|0,1/2,0)

(5) 2 (0,1/2,0) 0,y,0
(2_y|0,1/2,0)

(6) 2 (1/2,0,0) x,0,0
(2_x|1/2,0,0)

(7) 2 (1/2,1/2,0) x,x,0
(2_{xy}|1/2,1/2,0)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(12) $\bar{4}^-$ -1/4,1'4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,1/2,0)

(13) m x,1/4,z
(m_y|0,1/2,0)

(14) m 1/4,y,z
(m_x|1/2,0,0)

(15) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(16) m x,x,z
($m_{\bar{x}y}$|0,0,0)

130 P4/ncc ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ 0,1/2,z
(4_z|1/2,1/2,0)

(4) 4^- 1/2,0,z
(4_z^{-1}|1/2,1/2,0)

(5) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(6) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(7) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}$|0,0,1/2)

(9) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) c x,0,z
(m_y|0,0,1/2)

(14) c 0,y,z
(m_x|0,0,1/2)

(15) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(16) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

130 P4/ncc ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(4) 4^- 1/4,1/4,z
(4_z^{-1}|0,1/2,0)

(5) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(6) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(7) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}$|0,0,1/2)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,1/2,0)

(13) c x,1/4,z
(m_y|0,1/2,1/2)

(14) c 1/4,y,z
(m_x|1/2,0,1/2)

(15) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(16) c x,x,z
($m_{\bar{x}y}$|0,0,1/2)

131 $P4_2/mmc$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,0,z
$(4_z|0,0,1/2)$

(4) 4^- (0,0,1/2) 0,0,z
$(4_z^{-1}|0,0,1/2)$

(5) 2 0,y,0
$(2_y|0,0,0)$

(6) 2 x,0,0
$(2_x|0,0,0)$

(7) 2 x,x,1/4
$(2_{xy}|0,0,1/2)$

(8) 2 x,$\bar{x}$,1/4
$(2_{\bar{x}y}|0,0,1/2)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) m x,y,0
$(m_z|0,0,0)$

(11) $\bar{4}^+$ 0,0,z; 0,0,1/4
$(\bar{4}_z|0,0,1/2)$

(12) $\bar{4}^-$ 0,0,z; 0,0,1/4
$(\bar{4}_z^{-1}|0,0,1/2)$

(13) m x,0,z
$(m_y|0,0,0)$

(14) m 0,y,z
$(m_x|0,0,0)$

(15) c x,$\bar{x}$,z
$(m_{xy}|0,0,1/2)$

(16) c x,x,z
$(m_{\bar{x}y}|0,0,1/2)$

132 $P4_2/mcm$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,0,z
$(4_z|0,0,1/2)$

(4) 4^- (0,0,1/2) 0,0,z
$(4_z^{-1}|0,0,1/2)$

(5) 2 0,y,1/4
$(2_y|0,0,1/2)$

(6) 2 x,0,1/4
$(2_x|0,0,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 x,$\bar{x}$,0
$(2_{\bar{x}y}|0,0,0)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) m x,y,0
$(m_z|0,0,0)$

(11) $\bar{4}^+$ 0,0,z; 0,0,1/4
$(\bar{4}_z|0,0,1/2)$

(12) $\bar{4}^-$ 0,0,z; 0,0,1/4
$(\bar{4}_z^{-1}|0,0,1/2)$

(13) c x,0,z
$(m_y|0,0,1/2)$

(14) c 0,y,z
$(m_x|0,0,1/2)$

(15) m x,$\bar{x}$,z
$(m_{xy}|0,0,0)$

(16) m x,x,z
$(m_{\bar{x}y}|0,0,0)$

133 $P4_2/nbc$ ORIGIN CHOICE 1

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,1/2,z
$(4_z|1/2,1/2,1/2)$

(4) 4^- (0,0,1/2) 1/2,0,z
$(4_z^{-1}|1/2,1/2,1/2)$

(5) 2 0,y,1/4
$(2_y|0,0,1/2)$

(6) 2 x,0,1/4
$(2_x|0,0,1/2)$

(7) 2 (1/2,1/2,0) x,x,0
$(2_{xy}|1/2,1/2,0)$

(8) 2 x,$\bar{x}$+1/2,0
$(2_{\bar{x}y}|1/2,1/2,0)$

(9) $\bar{1}$ 1/4,1/4,1/4
$(\bar{1}|1/2,1/2,1/2)$

(10) n (1/2,1/2,0) x,y,1/4
$(m_z|1/2,1/2,1/2)$

(11) $\bar{4}^+$ 0,0,z; 0,0,0
$(\bar{4}_z|0,0,0)$

(12) $\bar{4}^-$ 0,0,z; 0,0,0
$(\bar{4}_z^{-1}|0,0,0)$

(13) a x,1/4,z
$(m_y|1/2,1/2,0)$

(14) b 1/4,y,z
$(m_x|1/2,1/2,0)$

(15) c x,$\bar{x}$,z
$(m_{xy}|0,0,1/2)$

(16) c x,x,z
$(m_{\bar{x}y}|0,0,1/2)$

133 $P4_2/nbc$ ORIGIN CHOICE 2

(1) 1
$(1|0,0,0)$

(2) 2 1/4,1/4,z
$(2_z|1/2,1/2,0)$

(3) 4^+ (0,0,1/2) 1/4,1/4,z
$(4_z|1/2,0,1/2)$

(4) 4^- (0,0,1/2) 1/4,1/4,z
$(4_z^{-1}|0,1/2,1/2)$

(5) 2 1/4,y,0
$(2_y|1/2,0,0)$

(6) 2 x,1/4,0
$(2_x|0,1/2,0)$

(7) 2 x,x,1/4
$(2_{xy}|0,0,1/2)$

(8) 2 x,$\bar{x}$+1/2,1/4
$(2_{\bar{x}y}|1/2,1/2,1/2)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) n (1/2,1/2,0) x,y,0
$(m_z|1/2,1/2,0)$

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
$(\bar{4}_z|1/2,0,1/2)$

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4
$(\bar{4}_z^{-1}|0,1/2,1/2)$

(13) a x,0,z
$(m_y|1/2,0,0)$

(14) b 0,y,z
$(m_x|0,1/2,0)$

(15) c x,$\bar{x}$,z
$(m_{xy}|0,0,1/2)$

(16) n (1/2,1/2,1/2) x,x,z
$(m_{\bar{x}y}|1/2,1/2,1/2)$

134 $P4_2/nnm$ ORIGIN CHOICE 1

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,1/2,z
$(4_z|1/2,1/2,1/2)$

(4) 4^- (0,0,1/2) 1/2,0,z
$(4_z^{-1}|1/2,1/2,1/2)$

(5) 2 0,y,0
$(2_y|0,0,0)$

(6) 2 x,0,0
$(2_x|0,0,0)$

(7) 2 (1/2,1/2,0) x,x,1/4
$(2_{xy}|1/2,1/2,1/2)$

(8) 2 $x,\bar{x}+1/2,1/4$
$(2_{\bar{x}y}|1/2,1/2,1/2)$

(9) $\bar{1}$ 1/4,1/4,1/4
$(\bar{1}|1/2,1/2,1/2)$

(10) n (1/2,1/2,0) x,y,1/4
$(m_z|1/2,1/2,1/2)$

(11) $\bar{4}^+$ 0,0,z; 0,0,0
$(\bar{4}_z|0,0,0)$

(12) $\bar{4}^-$ 0,0,z; 0,0,0
$(\bar{4}_z^{-1}|0,0,0)$

(13) n (1/2,0,1/2) x,1/4,z
$(m_y|1/2,1/2,1/2)$

(14) n (0,1/2,1/2) 1/4,y,z
$(m_x|1/2,1/2,1/2)$

(15) m $x,\bar{x},z$
$(m_{xy}|0,0,0)$

(16) m x,x,z
$(m_{\bar{x}y}|0,0,0)$

134 $P4_2/nnm$ ORIGIN CHOICE 2

(1) 1
$(1|0,0,0)$

(2) 2 1/4,1/4,z
$(2_z|1/2,1/2,0)$

(3) 4^+ (0,0,1/2) 1/4,1/4,z
$(4_z|1/2,0,1/2)$

(4) 4^- (0,0,1/2) 1/4,1/4,z
$(4_z^{-1}|0,1/2,1/2)$

(5) 2 1/4,y,1/4
$(2_y|1/2,0,1/2)$

(6) 2 x,1/4,1/4
$(2_x|0,1/2,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 $x,\bar{x}+1/2,0$
$(2_{\bar{x}y}|1/2,1/2,0)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) n (1/2,1/2,0) x,y,0
$(m_z|1/2,1/2,0)$

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
$(\bar{4}_z|1/2,0,1/2)$

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4
$(\bar{4}_z^{-1}|0,1/2,1/2)$

(13) n (1/2,0,1/2) x,0,z
$(m_y|1/2,0,1/2)$

(14) n (0,1/2,1/2) 0,y,z
$(m_x|0,1/2,1/2)$

(15) m $x,\bar{x},z$
$(m_{xy}|0,0,0)$

(16) g (1/2,1/2,0) x,x,z
$(m_{\bar{x}y}|1/2,1/2,0)$

135 $P4_2/mbc$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,0,z
$(4_z|0,0,1/2)$

(4) 4^- (0,0,1/2) 0,0,z
$(4_z^{-1}|0,0,1/2)$

(5) 2 (0,1/2,0) 1/4,y,0
$(2_y|1/2,1/2,0)$

(6) 2 (1/2,0,0) x,1/4,0
$(2_x|1/2,1/2,0)$

(7) 2 (1/2,1/2,0) x,x,1/4
$(2_{xy}|1/2,1/2,1/2)$

(8) 2 $x,\bar{x}+1/2,1/4$
$(2_{\bar{x}y}|1/2,1/2,1/2)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) m x,y,0
$(m_z|0,0,0)$

(11) $\bar{4}^+$ 0,0,z; 0,0,1/4
$(\bar{4}_z|0,0,1/2)$

(12) $\bar{4}^-$ 0,0,z; 0,0,1/4
$(\bar{4}_z^{-1}|0,0,1/2)$

(13) a x,1/4,z
$(m_y|1/2,1/2,0)$

(14) b 1/4,y,z
$(m_x|1/2,1/2,0)$

(15) c $x+1/2,\bar{x},z$
$(m_{xy}|1/2,1/2,1/2)$

(16) n (1/2,1/2,1/2) x,x,z
$(m_{\bar{x}y}|1/2,1/2,1/2)$

136 $P4_2/mnm$

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,1/2,z
$(4_z|1/2,1/2,1/2)$

(4) 4^- (0,0,1/2) 1/2,0,z
$(4_z^{-1}|1/2,1/2,1/2)$

(5) 2 (0,1/2,0) 1/4,y,1/4
$(2_y|1/2,1/2,1/2)$

(6) 2 (1/2,0,0) x,1/4,1/4
$(2_x|1/2,1/2,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 $x,\bar{x},0$
$(2_{\bar{x}y}|0,0,0)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) m x,y,0
$(m_z|0,0,0)$

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
$(\bar{4}_z|1/2,1/2,1/2)$

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
$(\bar{4}_z^{-1}|1/2,1/2,1/2)$

(13) n (1/2,0,1/2) x,1/4,z
$(m_y|1/2,1/2,1/2)$

(14) n (0,1/2,1/2) 1/4,y,z
$(m_x|1/2,1/2,1/2)$

(15) m $x,\bar{x},z$
$(m_{xy}|0,0,0)$

(16) m x,x,z
$(m_{\bar{x}y}|0,0,0)$

137 $P4_2/nmc$ ORIGIN CHOICE 1

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,1/2,z
$(4_z|1/2,1/2,1/2)$

(4) 4^- (0,0,1/2) 1/2,0,z
$(4_z^{-1}|1/2,1/2,1/2)$

(5) 2 (0,1/2,0) 1/4,y,1/4
$(2_y|1/2,1/2,1/2)$

(6) 2 (1/2,0,0) x,1/4,1/4
$(2_x|1/2,1/2,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 x,$\bar{x}$,0
$(2_{\bar{x}y}|0,0,0)$

(9) $\bar{1}$ 1/4,1/4,1/4
$(\bar{1}|1/2,1/2,1/2)$

(10) n (1/2,1/2,0) x,y,1/4
$(m_z|1/2,1/2,1/2)$

(11) $\bar{4}^+$ 0,0,z; 0,0,0
$(\bar{4}_z|0,0,0)$

(12) $\bar{4}^-$ 0,0,z; 0,0,0
$(\bar{4}_z^{-1}|0,0,0)$

(13) m x,0,z
$(m_y|0,0,0)$

(14) m 0,y,z
$(m_x|0,0,0)$

(15) c x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,1/2)$

(16) n (1/2,1/2,1/2) x,x,z
$(m_{\bar{x}y}|1/2,1/2,1/2)$

137 $P4_2/nmc$ ORIGIN CHOICE 2

(1) 1
$(1|0,0,0)$

(2) 2 1/4,1/4,z
$(2_z|1/2,1/2,0)$

(3) 4^+ (0,0,1/2) 1/4,1/4,z
$(4_z|1/2,0,1/2)$

(4) 4^- (0,0,1/2) 1/4,1/4,z
$(4_z^{-1}|0,1/2,1/2)$

(5) 2 (0,1/2,0) 0,y,0
$(2_y|0,1/2,0)$

(6) 2 (1/2,0,0) x,0,0
$(2_x|1/2,0,0)$

(7) 2 (1/2,1/2,0) x,x,1/4
$(2_{xy}|1/2,1/2,1/2)$

(8) 2 x,$\bar{x}$,1/4
$(2_{\bar{x}y}|0,0,1/2)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) n (1/2,1/2,0) x,y,0
$(m_z|1/2,1/2,0)$

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
$(\bar{4}_z|1/2,0,1/2)$

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4
$(\bar{4}_z^{-1}|0,1/2,1/2)$

(13) m x,1/4,z
$(m_y|0,1/2,0)$

(14) m 1/4,y,z
$(m_x|1/2,0,0)$

(15) c x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,1/2)$

(16) c x,x,z
$(m_{\bar{x}y}|0,0,1/2)$

138 $P4_2/ncm$ ORIGIN CHOICE 1

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 4^+ (0,0,1/2) 0,1/2,z
$(4_z|1/2,1/2,1/2)$

(4) 4^- (0,0,1/2) 1/2,0,z
$(4_z^{-1}|1/2,1/2,1/2)$

(5) 2 (0,1/2,0) 1/4,y,0
$(2_y|1/2,1/2,0)$

(6) 2 (1/2,0,0) x,1/4,0
$(2_x|1/2,1/2,0)$

(7) 2 x,x,1/4
$(2_{xy}|0,0,1/2)$

(8) 2 x,$\bar{x}$,1/4
$(2_{\bar{x}y}|0,0,1/2)$

(9) $\bar{1}$ 1/4,1/4,1/4
$(\bar{1}|1/2,1/2,1/2)$

(10) n (1/2,1/2,0) x,y,1/4
$(m_z|1/2,1/2,1/2)$

(11) $\bar{4}^+$ 0,0,z; 0,0,0
$(\bar{4}_z|0,0,0)$

(12) $\bar{4}^-$ 0,0,z; 0,0,0
$(\bar{4}_z^{-1}|0,0,0)$

(13) c x,0,z
$(m_y|0,0,1/2)$

(14) c 0,y,z
$(m_x|0,0,1/2)$

(15) m x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,0)$

(16) g (1/2,1/2,0) x,x,z
$(m_{\bar{x}y}|1/2,1/2,0)$

138 $P4_2/ncm$ ORIGIN CHOICE 2

(1) 1
$(1|0,0,0)$

(2) 2 1/4,1/4,z
$(2_z|1/2,1/2,0)$

(3) 4^+ (0,0,1/2) 1/4,1/4,z
$(4_z|1/2,0,1/2)$

(4) 4^- (0,0,1/2) 1/4,1/4,z
$(4_z^{-1}|0,1/2,1/2)$

(5) 2 (0,1/2,0) 0,y,1/4
$(2_y|0,1/2,1/2)$

(6) 2 (1/2,0,0) x,0,1/4
$(2_x|1/2,0,1/2)$

(7) 2 (1/2,1/2,0) x,x,0
$(2_{xy}|1/2,1/2,0)$

(8) 2 x,$\bar{x}$,0
$(2_{\bar{x}y}|0,0,0)$

(9) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(10) n (1/2,1/2,0) x,y,0
$(m_z|1/2,1/2,0)$

(11) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
$(\bar{4}_z|1/2,0,1/2)$

(12) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4
$(\bar{4}_z^{-1}|0,1/2,1/2)$

(13) c x,1/4,z
$(m_y|0,1/2,1/2)$

(14) c 1/4,y,z
$(m_x|1/2,0,1/2)$

(15) m x+1/2,$\bar{x}$,z
$(m_{xy}|1/2,1/2,0)$

(16) m x,x,z
$(m_{\bar{x}y}|0,0,0)$

139 I4/mmm

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 4^+ 0,0,z
($4_z|0,0,0$)

(4) 4^- 0,0,z
($4_z^{-1}|0,0,0$)

(5) 2 0,y,0
($2_y|0,0,0$)

(6) 2 x,0,0
($2_x|0,0,0$)

(7) 2 x,x,0
($2_{xy}|0,0,0$)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}|0,0,0$)

(9) $\bar{1}$ 0,0,0
($\bar{1}|0,0,0$)

(10) m x,y,0
($m_z|0,0,0$)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(13) m x,0,z
($m_y|0,0,0$)

(14) m 0,y,z
($m_x|0,0,0$)

(15) m x,$\bar{x}$,z
($m_{xy}|0,0,0$)

(16) m x,x,z
($m_{\bar{x}y}|0,0,0$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) 4^+ (0,0,1/2) 0,1/2,z
($4_z|1/2,1/2,1/2$)

(4) 4^- (0,0,1/2) 1/2,0,z
($4_z^{-1}|1/2,1/2,1/2$)

(5) 2 (0,1/2,0) 1/4,y,1/4
($2_y|1/2,1/2,1/2$)

(6) 2 (1/2,0,0) x,1/4,1/4
($2_x|1/2,1/2,1/2$)

(7) 2 (1/2,1/2,0) x,x,1/4
($2_{xy}|1/2,1/2,1/2$)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}|1/2,1/2,1/2$)

(9) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}|1/2,1/2,1/2$)

(10) n (1/2,1/2,0) x,y,1/4
($m_z|1/2,1/2,1/2$)

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(13) n (1/2,0,1/2) x,1/4,z
($m_y|1/2,1/2,1/2$)

(14) n (0,1/2,1/2) 1/4,y,z
($m_x|1/2,1/2,1/2$)

(15) c x+1/2,$\bar{x}$,z
($m_{xy}|1/2,1/2,1/2$)

(16) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}|1/2,1/2,1/2$)

140 I4/mcm

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 4^+ 0,0,z
($4_z|0,0,0$)

(4) 4^- 0,0,z
($4_z^{-1}|0,0,0$)

(5) 2 0,y,1/4
($2_y|0,0,1/2$)

(6) 2 x,0,1/4
($2_x|0,0,1/2$)

(7) 2 x,x,1/4
($2_{xy}|0,0,1/2$)

(8) 2 x,$\bar{x}$,1/4
($2_{\bar{x}y}|0,0,1/2$)

(9) $\bar{1}$ 0,0,0
($\bar{1}|0,0,0$)

(10) m x,y,0
($m_z|0,0,0$)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(13) c x,0,z
($m_y|0,0,1/2$)

(14) c 0,y,z
($m_x|0,0,1/2$)

(15) c x,$\bar{x}$,z
($m_{xy}|0,0,1/2$)

(16) c x,x,z
($m_{\bar{x}y}|0,0,1/2$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) 4^+ (0,0,1/2) 0,1/2,z
($4_z|1/2,1/2,1/2$)

(4) 4^- (0,0,1/2) 1/2,0,z
($4_z^{-1}|1/2,1/2,1/2$)

(5) 2 (0,1/2,0) 1/4,y,0
($2_y|1/2,1/2,0$)

(6) 2 (1/2,0,0) x,1/4,0
($2_x|1/2,1/2,0$)

(7) 2 (1/2,1/2,0) x,x,0
($2_{xy}|1/2,1/2,0$)

(8) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}|1/2,1/2,0$)

(9) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}|1/2,1/2,1/2$)

(10) n (1/2,1/2,0) x,y,1/4
($m_z|1/2,1/2,1/2$)

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(13) a x,1/4,z
($m_y|1/2,1/2,0$)

(14) b 1/4,y,z
($m_x|1/2,1/2,0$)

(15) m x+1/2,$\bar{x}$,z
($m_{xy}|1/2,1/2,0$)

(16) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}|1/2,1/2,0$)

141 $I4_1/amd$ ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
($4_z|0,1/2,1/4$)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
($4_z^{-1}|1/2,0,3/4$)

(5) 2 1/4,y,3/8
($2_y|1/2,0,3/4$)

(6) 2 x,1/4,1/8
($2_x|0,1/2,1/4$)

(7) 2 (1/2,1/2,0) x,x,1/4
($2_{xy}|1/2,1/2,1/2$)

(8) 2 x,$\bar{x}$,0
($2_{\bar{x}y}|0,0,0$)

(9) $\bar{1}$ 0,1/4,1/8
($\bar{1}|0,1/2,1/4$)

(10) a x,y,3/8
($m_z|1/2,0,3/4$)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(13) n (1/2,0,1/2) x,1/4,z
($m_y|1/2,1/2,1/2$)

(14) m 0,y,z
($m_x|0,0,0$)

(15) d (1/4,-1/4,3/4) x+1/4,$\bar{x}$,z
($m_{xy}|1/2,0,3/4$)

(16) d (1/4,1/4,1/4) x-1/4,x,z
($m_{\bar{x}y}|0,1/2,1/4$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
($4_z|1/2,0,3/4$)

(4) 4^- (0,0,1/4) 1/4,1/4,z
($4_z^{-1}|0,1/2,1/4$)

(5) 2 (0,1/2,0) 0,y,1/8
($2_y|0,1/2,1/4$)

(6) 2 (1/2,0,0) x,0,3/8
($2_x|1/2,0,3/4$)

(7) 2 x,x,0
($2_{xy}|0,0,0$)

(8) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}|1/2,1/2,1/2$)

(9) $\bar{1}$ 1/4,0,3/8
($\bar{1}|1/2,0,3/4$)

(10) b x,y,1/8
($m_z|0,1/2,1/4$)

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z|1/2,1/2,1/2$)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(13) m x,0,z
($m_y|0,0,0$)

(14) n (0,1/2,1/2) 1/4,y,z
($m_x|1/2,1/2,1/2$)

(15) d (-1/4,1/4,1/4) x+1/4,$\bar{x}$,z
($m_{xy}|0,1/2,1/4$)

(16) d (1/4,1/4,3/4) x+1/4,x,z
($m_{\bar{x}y}|1/2,0,3/4$)

141 $I4_1/amd$ ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 (0,0,1/2) 1/4,0,z
($2_z|1/2,0,1/2$)

(3) 4^+ (0,0,1/4) -1/4,1/2,z
($4_z|1/4,3/4,1/4$)

(4) 4^- (0,0,3/4) 1/4,0,z
($4_z^{-1}|1/4,1/4,3/4$)

(5) 2 1/4,y,1/4
($2_y|1/2,0,1/2$)

(6) 2 x,0,0
($2_x|0,0,0$)

(7) 2 (1/2,1/2,0) x,x+1/4,1/8
($2_{xy}|1/4,3/4,1/4$)

(8) 2 $x,\bar{x}$+1/4,3/8
($2_{\bar{x}y}|1/4,1/4,3/4$)

(9) $\bar{1}$ 0,0,0
($\bar{1}|0,0,0$)

(10) a x,y,1/4
($m_z|1/2,0,1/2$)

(11) $\bar{4}^+$ 1/2,-1/4,z; 1/2,-1/4,3/8
($\bar{4}_z|3/4,1/4,3/4$)

(12) $\bar{4}^-$ 0,3/4,z; 0,3/4,1/8
($\bar{4}_z^{-1}|3/4,3/4,1/4$)

(13) n (1/2,0,1/2) x,0,z
($m_y|1/2,0,1/2$)

(14) m 0,y,z
($m_x|0,0,0$)

(15) d (1/4,-1/4,3/4) $x+1/2,\bar{x},z$
($m_{xy}|3/4,1/4,3/4$)

(16) d (3/4,3/4,1/4) x,x,z
($m_{\bar{x}y}|3/4,3/4,1/4$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 0,1/4,z
($2_z|0,1/2,0$)

(3) 4^+ (0,0,3/4) 1/4,1/2,z
($4_z|3/4,1/4,3/4$)

(4) 4^- (0,0,1/4) 3/4,0,z
($4_z^{-1}|3/4,3/4,1/4$)

(5) 2 (0,1/2,0) 0,y,0
($2_y|0,1/2,0$)

(6) 2 (1/2,0,0) x,1/4,1/4
($2_x|1/2,1/2,1/2$)

(7) 2 (1/2,1/2,0) x,x-1/4,3/8
($2_{xy}|3/4,1/4,3/4$)

(8) 2 $x,\bar{x}$+3/4,1/8
($2_{\bar{x}y}|3/4,3/4,1/4$)

(9) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}|1/2,1/2,1/2$)

(10) b x,y,0
($m_z|0,1/2,0$)

(11) $\bar{4}^+$ 1/2,1/4,z; 1/2,1/4,1/8
($\bar{4}_z|1/4,3/4,1/4$)

(12) $\bar{4}^-$ 0,1/4,z; 0,1/4,3/8
($\bar{4}_z^{-1}|1/4,1/4,3/4$)

(13) m x,1/4,z
($m_y|0,1/2,0$)

(14) n (0,1/2,1/2) 1/4,y,z
($m_x|1/2,1/2,1/2$)

(15) d (-1/4,1/4,1/4) $x+1/2,\bar{x},z$
($m_{xy}|1/4,3/4,1/4$)

(16) d (1/4,1/4,3/4) x,x,z
($m_{\bar{x}y}|1/4,1/4,3/4$)

142 $I4_1/acd$ ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 (0,0,1/2) 1/4,1/4,z
($2_z|1/2,1/2,1/2$)

(3) 4^+ (0,0,1/4) -1/4,1/4,z
($4_z|0,1/2,1/4$)

(4) 4^- (0,0,3/4) 1/4,-1/4,z
($4_z^{-1}|1/2,0,3/4$)

(5) 2 1/4,y,1/8
($2_y|1/2,0,1/4$)

(6) 2 x,1/4,3/8
($2_x|0,1/2,3/4$)

(7) 2 (1/2,1/2,0) x,x,0
($2_{xy}|1/2,1/2,0$)

(8) 2 $x,\bar{x}$,1/4
($2_{\bar{x}y}|0,0,1/2$)

(9) $\bar{1}$ 0,1/4,1/8
($\bar{1}|0,1/2,1/4$)

(10) a x,y,3/8
($m_z|1/2,0,3/4$)

(11) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(12) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}|1/2,1/2,1/2$)

(13) a x,1/4,z
($m_y|1/2,1/2,0$)

(14) c 0,y,z
($m_x|0,0,1/2$)

(15) d (1/4,-1/4,1/4) $x+1/4,\bar{x},z$
($m_{xy}|1/2,0,1/4$)

(16) d (1/4,1/4,3/4) x-1/4,x,z
($m_{\bar{x}y}|0,1/2,3/4$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 4^+ (0,0,3/4) 1/4,1/4,z
(4_z|1/2,0,3/4)

(4) 4^- (0,0,1/4) 1/4,1/4,z
(4_z^{-1}|0,1/2,1/4)

(5) 2 (0,1/2,0) 0,y,3/8
(2_y|0,1/2,3/4)

(6) 2 (1/2,0,0) x,0,1/8
(2_x|1/2,0,1/4)

(7) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(8) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}$|1/2,1/2,0)

(9) $\bar{1}$ 1/4,0,3/8
($\bar{1}$|1/2,0,3/4)

(10) b x,y,1/8
(m_z|0,1/2,1/4)

(11) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(12) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(13) c x,0,z
(m_y|0,0,1/2)

(14) b 1/4,y,z
(m_x|1/2,1/2,0)

(15) d (-1/4,1/4,3/4) x+1/4,$\bar{x}$,z
(m_{xy}|0,1/2,3/4)

(16) d (1/4,1/4,1/4) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,1/4)

142 $I4_1/acd$ ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 4^+ (0,0,1/4) -1/4,1/2,z
(4_z|1/4,3/4,1/4)

(4) 4^- (0,0,3/4) 1/4,0,z
(4_z^{-1}|1/4,1/4,3/4)

(5) 2 1/4,y,0
(2_y|1/2,0,0)

(6) 2 x,0,1/4
(2_x|0,0,1/2)

(7) 2 (1/2,1/2,0) x,x+1/4,3/8
(2_{xy}|1/4,3/4,3/4)

(8) 2 x,$\bar{x}$+1/4,1/8
($2_{\bar{x}y}$|1/4,1/4,1/4)

(9) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(10) a x,y,1/4
(m_z|1/2,0,1/2)

(11) $\bar{4}^+$ 1/2,-1/4,z; 1/2,-1/4,3/8
($\bar{4}_z$|3/4,1/4,3/4)

(12) $\bar{4}^-$ 0,3/4,z; 0,3/4,1/8
($\bar{4}_z^{-1}$|3/4,3/4,1/4)

(13) a x,0,z
(m_y|1/2,0,0)

(14) c 0,y,z
(m_x|0,0,1/2)

(15) d (1/4,-1/4,1/4) x+1/2,$\bar{x}$,z
(m_{xy}|3/4,1/4,1/4)

(16) d (3/4,3/4,3/4) x,x,z
($m_{\bar{x}y}$|3/4,3/4,3/4)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 4^+ (0,0,3/4) 1/4,1/2,z
(4_z|3/4,1/4,3/4)

(4) 4^- (0,0,1/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,1/4)

(5) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(6) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(7) 2 (1/2,1/2,0) x,x-1/4,1/8
(2_{xy}|3/4,1/4,1/4)

(8) 2 x,$\bar{x}$+3/4,3/8
($2_{\bar{x}y}$|3/4,3/4,3/4)

(9) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(10) b x,y,0
(m_z|0,1/2,0)

(11) $\bar{4}^+$ 1/2,1/4,z; 1/2,1/4,1/8
($\bar{4}_z$|1/4,3/4,1/4)

(12) $\bar{4}^-$ 0,1/4,z; 0,1/4,3/8
($\bar{4}_z^{-1}$|1/4,1/4,3/4)

(13) c x,1/4,z
(m_y|0,1/2,1/2)

(14) b 1/4,y,z
(m_x|1/2,1/2,0)

(15) d (-1/4,1/4,3/4) x+1/2,$\bar{x}$,z
(m_{xy}|1/4,3/4,3/4)

(16) d (1/4,1/4,1/4) x,x,z
($m_{\bar{x}y}$|1/4,1/4,1/4)

143 P3

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

144 $P3_1$

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,1/3) 0,0,z
(3_z|0,0,1/3)

(3) 3^- (0,0,2/3) 0,0,z
(3_z^{-1}|0,0,2/3)

145 $P3_2$

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,2/3) 0,0,z
(3_z|0,0,2/3)

(3) 3^- (0,0,1/3) 0,0,z
(3_z^{-1}|0,0,1/3)

146 R3 HEXAGONAL AXES

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
(1|2/3,1/3,1/3)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
(3_z|2/3,1/3,1/3)

(3) 3^- (0,0,1/3) 1/3,0,z
(3_z^{-1}|2/3,1/3,1/3)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
(1|1/3,2/3,2/3)

(2) 3^+ (0,0,2/3) 0,1/3,z
(3_z|1/3,2/3,2/3)

(3) 3^- (0,0,2/3) 1/3,1/3,z
(3_z^{-1}|1/3,2/3,2/3)

146 R3 RHOMBOHEDRAL AXES

(1) 1
(1|0,0,0)

(2) 3^+ x,x,x
(3_{xyz}|0,0,0)

(3) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

147 $P\bar{3}$

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) $\bar{1}$
($\bar{1}$|0,0,0)

(5) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z$|0,0,0)

(6) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}$|0,0,0)

148 $R\bar{3}$ HEXAGONAL AXES

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(5) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z$|0,0,0)

(6) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}$|0,0,0)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
(1|2/3,1/3,1/3)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
(3_z|2/3,1/3,1/3)

(3) 3^- (0,0,1/3) 1/3,0,z
(3_z^{-1}|2/3,1/3,1/3)

(4) $\bar{1}$ 1/3,1/6,1/6
($\bar{1}$|2/3,1/3,1/3)

(5) $\bar{3}^+$ 1/3,-1/3,z; 1/3,-1/3,1/6
($\bar{3}_z$|2/3,1/3,1/3)

(6) $\bar{3}^-$ 1/3,2/3,z; 1/3,2/3,1/6
($\bar{3}_z^{-1}$|2/3,1/3,1/3)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
(1|1/3,2/3,2/3)

(2) 3^+ (0,0,2/3) 0,1/3,z
(3_z|1/3,2/3,2/3)

(3) 3^- (0,0,2/3) 1/3,1/3,z
(3_z^{-1}|1/3,2/3,2/3)

(4) $\bar{1}$ 1/6,1/3,1/3
($\bar{1}$|1/3,2/3,2/3)

(5) $\bar{3}^+$ 2/3,1/3,z; 2/3,1/3,1/3
($\bar{3}_z$|1/3,2/3,2/3)

(6) $\bar{3}^-$ -1/3,1/3,z; -1/3,1/3,1/3
($\bar{3}_z^{-1}$|1/3,2/3,2/3)

148 R$\bar{3}$ RHOMBOHEDRAL AXES

(1) 1
(1|0,0,0)

(2) 3^+ x,x,x
(3_{xyz}|0,0,0)

(3) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(4) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(5) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(6) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

149 P312

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 x,$\bar{x}$,0
(2_3|0,0,0)

(5) 2 x,2x,0
(2_2|0,0,0)

(6) 2 2x,x,0
(2_1|0,0,0)

150 P321

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 x,x,0
(2_{xy}|0,0,0)

(5) 2 x,0,0
(2_x|0,0,0)

(6) 2 0,y,0
(2_y|0,0,0)

151 P$3_1$12

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,1/3) 0,0,z
(3_z|0,0,1/3)

(3) 3^- (0,0,2/3) 0,0,z
(3_z^{-1}|0,0,2/3)

(4) 2 x,$\bar{x}$,1/3
(2_3|0,0,2/3)

(5) 2 x,2x,1/6
(2_2|0,0,1/3)

(6) 2 2x,x,0
(2_1|0,0,0)

152 P$3_1$21

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,1/3) 0,0,z
(3_z|0,0,1/3)

(3) 3^- (0,0,2/3) 0,0,z
(3_z^{-1}|0,0,2/3)

(4) 2 x,x,0
(2_{xy}|0,0,0)

(5) 2 x,0,1/3
(2_x|0,0,2/3)

(6) 2 0,y,1/6
(2_y|0,0,1/3)

153 P$3_2$12

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,2/3) 0,0,z
(3_z|0,0,2/3)

(3) 3^- (0,0,1/3) 0,0,z
(3_z^{-1}|0,0,1/3)

(4) 2 x,$\bar{x}$,1/6
(2_3|0,0,1/3)

(5) 2 x,2x,1/3
(2_2|0,0,2/3)

(6) 2 2x,x,0
(2_1|0,0,0)

154 $P3_221$

(1) 1
($1|0,0,0$)

(2) 3^+ (0,0,2/3) 0,0,z
($3_z|0,0,2/3$)

(3) 3^- (0,0,1/3) 0,0,z
($3_z^{-1}|0,0,1/3$)

(4) 2 x,x,0
($2_{xy}|0,0,0$)

(5) 2 x,0,1/6
($2_x|0,0,1/3$)

(6) 2 0,y,1/3
($2_y|0,0,2/3$)

155 R32 HEXAGONAL AXES

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 x,x,0
($2_{xy}|0,0,0$)

(5) 2 x,0,0
($2_x|0,0,0$)

(6) 2 0,y,0
($2_y|0,0,0$)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
($1|2/3,1/3,1/3$)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
($3_z|2/3,1/3,1/3$)

(3) 3^- (0,0,1/3) 1/3,0,z
($3_z^{-1}|2/3,1/3,1/3$)

(4) 2 (1/2,1/2,0) x,x-1/6,1/6
($2_{xy}|2/3,1/3,1/3$)

(5) 2 (1/2,0,0) x,1/6,1/6
($2_x|2/3,1/3,1/3$)

(6) 2 1/3,y,1/6
($2_y|2/3,1/3,1/3$)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
($1|1/3,2/3,2/3$)

(2) 3^+ (0,0,2/3) 0,1/3,z
($3_z|1/3,2/3,2/3$)

(3) 3^- (0,0,2/3) 1/3,1/3,z
($3_z^{-1}|1/3,2/3,2/3$)

(4) 2 (1/2,1/2,0) x,x+1/6,1/3
($2_{xy}|1/3,2/3,2/3$)

(5) 2 x,1/3,1/3
($2_x|1/3,2/3,2/3$)

(6) 2 (0,1/2,0) 1/6,y,1/3
($2_y|1/3,2/3,2/3$)

155 R32 RHOMBOHEDRAL AXES

(1) 1
($1|0,0,0$)

(2) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(3) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(4) 2 $x,\bar{x},0$
($2_{\bar{x}y}|0,0,0$)

(5) 2 $0,y,\bar{y}$
($2_{\bar{y}z}|0,0,0$)

(6) 2 $\bar{x},0,x$
($2_{\bar{x}z}|0,0,0$)

156 P3m1

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) m $x,\bar{x},z$
($m_{xy}|0,0,0$)

(5) m x,2x,z
($m_x|0,0,0$)

(6) m 2x,x,z
($m_y|0,0,0$)

157 P31m

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) m x,x,z
($m_3|0,0,0$)

(5) m x,0,z
($m_2|0,0,0$)

(6) m 0,y,z
($m_1|0,0,0$)

158 P3c1

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) c x,$\overline{x}$,z
($m_{xy}|0,0,1/2$)

(5) c x,2x,z
($m_x|0,0,1/2$)

(6) c 2x,x,z
($m_y|0,0,12$)

159 P31c

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) c x,x,z
($m_3|0,0,1/2$)

(5) c x,0,z
($m_2|0,0,1/2$)

(6) c 0,y,z
($m_1|0,0,1/2$)

160 R3m HEXAGONAL AXES

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) m x,$\overline{x}$,z
($m_{xy}|0,0,0$)

(5) m x,2x,z
($m_x|0,0,0$)

(6) m 2x,x,z
($m_y|0,0,0$)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
($1|2/3,1/3,1/3$)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
($3_z|2/3,1/3,1/3$)

(3) 3^- (0,0,1/3) 1/3,0,z
($3_z^{-1}|2/3,1/3,1/3$)

(4) g (1/6,-1/6,1/3) x+1/2,$\overline{x}$,z
($m_{xy}|2/3,1/3,1/3$)

(5) g (1/6,1/3,1/3) x,2x-1/2,z
($m_x|2/3,1/3,1/3$)

(6) g (2/3,1/3,1/3) 2x,x,z
($m_y|2/3,1/3,1/3$)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
($1|1/3,2/3,2/3$)

(2) 3^+ (0,0,2/3) 0,1/3,z
($3_z|1/3,2/3,2/3$)

(3) 3^- (0,0,2/3) 1/3,1/3,z
($3_z^{-1}|1/3,2/3,2/3$)

(4) g (-1/6,1/6,2/3) x+1/2,$\overline{x}$,z
($m_{xy}|1/3,2/3,2/3$)

(5) g (1/3,2/3,2/3) x,2x,z
($m_x|1/3,2/3,2/3$)

(6) g (1/3,1/6,2/3) 2x-1/2,x,z
($m_y|1/3,2/3,2/3$)

160 R3m RHOMBOHEDRAL AXES

(1) 1
(1|0,0,0)

(2) 3^+ x,x,x
(3_{xyz}|0,0,0)

(3) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(4) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(5) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(6) m x,y,x
($m_{\bar{x}z}$|0,0,0)

161 R3c HEXAGONAL AXES

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(5) c x,2x,z
(m_x|0,0,1/2)

(6) c 2x,x,z
(m_y|0,0,1/2)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
(1|2/3,1/3,1/3)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
(3_z|2/3,1/3,1/3)

(3) 3^- (0,0,1/3) 1/3,0,z
(3_z^{-1}|2/3,1/3,1/3)

(4) g (1/6,-1/6,5/6) x+1/2,$\bar{x}$,z
(m_{xy}|2/3,1/3,5/6)

(5) g (1/6,1/3,5/6) x,2x-1/2,z
(m_x|2/3,1/3,5/6)

(6) g (2/3,1/3,5/6) 2x,x,z
(m_y|2/3,1/3,5/6)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
(1|1/3,2/3,2/3)

(2) 3^+ (0,0,2/3) 0,1/3,z
(3_z|1/3,2/3,2/3)

(3) 3^- (0,0,2/3) 1/3,1/3,z
(3_z^{-1}|1/3,2/3,2/3)

(4) g (-1/6,1/6,1/6) x+1/2,$\bar{x}$,z
(m_{xy}|1/3,2/3,1/6)

(5) g (1/3,2/3,1/6) x,2x,z
(m_x|1/3,2/3,1/6)

(6) g (1/3,1/6,1/6) 2x-1/2,x,z
(m_y|1/3,2/3,1/6)

161 R3c RHOMBOHEDRAL AXES

(1) 1
(1|0,0,0)

(2) 3^+ x,x,x
(3_{xyz}|0,0,0)

(3) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(4) n (1/2,1/2,1/2) x,x,z
($n_{\bar{x}y}$|1/2,1/2,1/2)

(5) n (1/2,1/2,1/2) x,y,y
($n_{\bar{y}z}$|1/2,1/2,1/2)

(6) n (1/2,1/2,1/2) x,y,x
($n_{\bar{x}z}$|1/2,1/2,1/2)

162 P$\bar{3}$1m

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 x,$\bar{x}$,0
(2_3|0,0,0)

(5) 2 x,2x,0
(2_2|0,0,0)

(6) 2 2x,x,0
(2_1|0,0,0)

(7) $\bar{1}$
($\bar{1}$|0,0,0)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z$|0,0,0)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}$|0,0,0)

(10) m x,x,z
(m_3|0,0,0)

(11) m x,0,z
(m_2|0,0,0)

(12) m 0,y,z
(m_1|0,0,0)

163 P$\bar{3}$1c

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 x,$\bar{x}$,1/4
($2_3|0,0,1/2$)

(5) 2 x,2x,1/4
($2_2|0,0,1/2$)

(6) 2 2x,x,1/4
($2_1|0,0,1/2$)

(7) $\bar{1}$
($\bar{1}|0,0,0$)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z|0,0,0$)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}|0,0,0$)

(10) c x,x,z
($m_3|0,0,1/2$)

(11) c x,0,z
($m_2|0,0,1/2$)

(12) c 0,y,z
($m_1|0,0,1/2$)

164 P$\bar{3}$m1

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 x,x,0
($2_{xy}|0,0,0$)

(5) 2 x,0,0
($2_x|0,0,0$)

(6) 2 0,y,0
($2_y|0,0,0$)

(7) $\bar{1}$
($\bar{1}|0,0,0$)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z|0,0,0$)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}|0,0,0$)

(10) m x,$\bar{x}$,z
($m_{xy}|0,0,0$)

(11) m x,2x,z
($m_x|0,0,0$)

(12) m 2x,x,z
($m_y|0,0,0$)

165 P$\bar{3}$c1

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 x,x,1/4
($2_{xy}|0,0,1/2$)

(5) 2 x,0,1/4
($2_x|0,0,1/2$)

(6) 2 0,y,1/4
($2_y|0,0,1/2$)

(7) $\bar{1}$
($\bar{1}|0,0,0$)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z|0,0,0$)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}|0,0,0$)

(10) c x,$\bar{x}$,z
($m_{xy}|0,0,1/2$)

(11) c x,2x,z
($m_x|0,0,1/2$)

(12) c 2x,x,z
($m_y|0,0,1/2$)

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 x,x,0
($2_{xy}|0,0,0$)

(5) 2 x,0,0
($2_x|0,0,0$)

(6) 2 0,y,0
($2_y|0,0,0$)

(7) $\bar{1}$
($\bar{1}|0,0,0$)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z|0,0,0$)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}|0,0,0$)

(10) m x,$\bar{x}$,z
($m_{xy}|0,0,0$)

(11) m x,2x,z
($m_x|0,0,0$)

(12) m 2x,x,z
($m_y|0,0,0$)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
($1|2/3,1/3,1/3$)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
($3_z|2/3,1/3,1/3$)

(3) 3^- (0,0,1/3) 1/3,0,z
($3_z^{-1}|2/3,1/3,1/3$)

(4) 2 (1/2,1/2,0) x,x-1/6,1/6
($2_{xy}|2/3,1/3,1/3$)

(5) 2 (1/2,0,0) x,1/6,1/6
($2_x|2/3,1/3,1/3$)

(6) 2 1/3,y,1/6
($2_y|2/3,1/3,1/3$)

(7) $\bar{1}$ 1/3,1/6,1/6
($\bar{1}|2/3,1/3,1/3$)

(8) $\bar{3}^+$ 1/3,-1/3,z; 1/3,-1/3,1/6
($\bar{3}_z|2/3,1/3,1/3$)

(9) $\bar{3}^-$ 1/3,2/3,z; 1/3,2/3,1/6
($\bar{3}_z^{-1}|2/3,1/3,1/3$)

(10) g (1/6,-1/6,1/3) x+1/2,$\bar{x}$,z
($m_{xy}|2/3,1/3,1/3$)

(11) g (1/6,1/3,1/3) x,2x-1/2,z
($m_x|2/3,1/3,1/3$)

(12) g (2/3,1/3,1/3) 2x,x,z
($m_y|2/3,1/3,1/3$)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
($1|1/3,2/3,2/3$)

(2) 3^+ (0,0,2/3) 0,1/3,z
($3_z|1/3,2/3,2/3$)

(3) 3^- (0,0,2/3) 1/3,1/3,z
($3_z^{-1}|1/3,2/3,2/3$)

(4) 2 (1/2,1/2,0) x,x+1/6,1/3
($2_{xy}|1/3,2/3,2/3$)

(5) 2 x,1/3,1/3
($2_x|1/3,2/3,2/3$)

(6) 2 (0,1/2,0) 1/6,y,1/3
($2_y|1/3,2/3,2/3$)

(4) $\bar{1}$ 1/6,1/3,1/3
($\bar{1}|1/3,2/3,2/3$)

(5) $\bar{3}^+$ 2/3,1/3,z; 2/3,1/3,1/3
($\bar{3}_z|1/3,2/3,2/3$)

(6) $\bar{3}^-$ -1/3,1/3,z; -1/3,1/3,1/3
($\bar{3}_z^{-1}|1/3,2/3,2/3$)

(10) g (-1/6,1/6,2/3) x+1/2,$\bar{x}$,z
($m_{xy}|1/3,2/3,2/3$)

(11) g (1/3,2/3,2/3) x,2x,z
($m_x|1/3,2/3,2/3$)

(12) g (1/3,1/6,2/3) 2x-1/2,x,z
($m_y|1/3,2/3,2/3$)

166 R$\bar{3}$m RHOMBOHEDRAL AXES

(1) 1
(1|0,0,0)

(2) 3^+ x,x,x
(3_{xyz}|0,0,0)

(3) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(4) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(5) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(6) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(7) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(8) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(9) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(10) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(11) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(12) m x,y,x
($m_{\bar{x}z}$|0,0,0)

167 R$\bar{3}$c HEXAGONAL AXES

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(5) 2 x,0,1/4
(2_x|0,0,1/2)

(6) 2 0,y,1/4
(2_y|0,0,1/2)

(7) $\bar{1}$
($\bar{1}$|0,0,0)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z$|0,0,0)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}$|0,0,0)

(10) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(11) c x,2x,z
(m_x|0,0,1/2)

(12) c 2x,x,z
(m_y|0,0,1/2)

For (2/3,1/3,1/3) + set

(1) t (2/3,1/3,1/3)
(1|2/3,1/3,1/3)

(2) 3^+ (0,0,1/3) 1/3,1/3,z
(3_z|2/3,1/3,1/3)

(3) 3^- (0,0,1/3) 1/3,0,z
(3_z^{-1}|2/3,1/3,1/3)

(4) 2(1/2,1/2,0) x,x-1/6,5/12
(2_{xy}|2/3,1/3,5/6)

(5) 2 (1/2,0,0) x,1/6,5/12
(2_x|2/3,1/3,5/6)

(6) 2 1/3,y,5/12
(2_y|2/3,1/3,5/6)

(7) $\bar{1}$ 1/3,1/6,1/6
($\bar{1}$|2/3,1/3,1/3)

(8) $\bar{3}^+$ 1/3,-1/3,z; 1/3,-1/3,1/6
($\bar{3}_z$|2/3,1/3,1/3)

(9) $\bar{3}^-$ 1/3,2/3,z; 1/3,2/3,1/6
($\bar{3}_z^{-1}$|2/3,1/3,1/3)

(10) g (1/6,-1/6,5/6) x+1/2,$\bar{x}$,z
(m_{xy}|2/3,1/3,5/6)

(11) g (1/6,1/3,5/6) x,2x-1/2,z
(m_x|2/3,1/3,5/6)

(12) g (2/3,1/3,5/6) 2x,x,z
(m_y|2/3,1/3,5/6)

For (1/3,2/3,2/3) + set

(1) t (1/3,2/3,2/3)
(1|1/3,2/3,2/3)

(2) 3^+ (0,0,2/3) 0,1/3,z
(3_z|1/3,2/3,2/3)

(3) 3^- (0,0,2/3) 1/3,1/3,z
(3_z^{-1}|1/3,2/3,2/3)

(4) 2(1/2,1/2,0) x,x+1/6,1/12
(2_{xy}|1/3,2/3,1/6)

(5) 2 x,1/3,1/12
(2_x|1/3,2/3,1/6)

(6) 2 (0,1/2,0) 1/6,y,1/12
(2_y|1/3,2/3,1/6)

(7) $\bar{1}$ 1/6,1/3,1/3
($\bar{1}$|1/3,2/3,2/3)

(8) $\bar{3}^+$ 2/3,1/3,z; 2/3,1/3,1/3
($\bar{3}_z$|1/3,2/3,2/3)

(9) $\bar{3}^-$ -1/3,1/3,z; -1/3,1/3,1/3
($\bar{3}_z^{-1}$|1/3,2/3,2/3)

(10) g (-1/6,1/6,1/6) x+1/2,$\bar{x}$,z
(m_{xy}|1/3,2/3,1/6)

(11) g (1/3,2/3,1/6) x,2x,z
(m_x|1/3,2/3,1/6)

(12) g (1/3,1/6,1/6) 2x-1/2,x,z
(m_y|1/3,2/3,1/6)

167 R$\bar{3}$c RHOMBOHEDRAL AXES

(1) 1
(1|0,0,0)

(2) 3^+ x,x,x
(3_{xyz}|0,0,0)

(3) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(4) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(5) 2 1/4,y,$\bar{y}$+1/2
($2_{\bar{y}z}$|1/2,1/2,1/2)

(6) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(7) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(8) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(9) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(10) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(11) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(12) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

168 P6

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 0,0,z
(2_z|0,0,0)

(5) 6^- 0,0,z
(6_z^{-1}|0,0,0)

(6) 6^+ 0,0,z
(6_z|0,0,0)

169 $P6_1$

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,1/3) 0,0,z
(3_z|0,0,1/3)

(3) 3^- (0,0,2/3) 0,0,z
(3_z^{-1}|0,0,2/3)

(4) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(5) 6^- (0,0,5/6) 0,0,z
(6_z^{-1}|0,0,5/6)

(6) 6^+ (0,0,1/6) 0,0,z
(6_z|0,0,1/6)

170 $P6_5$

(1) 1
(1|0,0,0)

(2) 3^+ (0,0,2/3) 0,0,z
(3_z|0,0,2/3)

(3) 3^- (0,0,1/3) 0,0,z
(3_z^{-1}|0,0,1/3)

(4) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(5) 6^- (0,0,1/6) 0,0,z
(6_z^{-1}|0,0,1/6)

(6) 6^+ (0,0,5/6) 0,0,z
(6_z|0,0,5/6)

171 $P6_2$

(1) 1
($1|0,0,0$)

(2) 3^+ (0,0,2/3) 0,0,z
($3_z|0,0,2/3$)

(3) 3^- (0,0,1/3) 0,0,z
($3_z^{-1}|0,0,1/3$)

(4) 2 0,0,z
($2_z|0,0,0$)

(5) 6^- (0,0,2/3) 0,0,z
($6_z^{-1}|0,0,2/3$)

(6) 6^+ (0,0,1/3) 0,0,z
($6_z|0,0,1/3$)

172 $P6_4$

(1) 1
($1|0,0,0$)

(2) 3^+ (0,0,1/3) 0,0,z
($3_z|0,0,1/3$)

(3) 3^- (0,0,2/3) 0,0,z
($3_z^{-1}|0,0,2/3$)

(4) 2 0,0,z
($2_z|0,0,0$)

(5) 6^- (0,0,1/3) 0,0,z
($6_z^{-1}|0,0,1/3$)

(6) 6^+ (0,0,2/3) 0,0,z
($6_z|0,0,2/3$)

173 $P6_3$

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 (0,0,1/2) 0,0,z
($2_z|0,0,1/2$)

(5) 6^- (0,0,1/2) 0,0,z
($6_z^{-1}|0,0,1/2$)

(6) 6^+ (0,0,1/2) 0,0,z
($6_z|0,0,1/2$)

174 $P\bar{6}$

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) m x,y,0
($m_z|0,0,0$)

(5) $\bar{6}^-$ 0,0,z; 0,0,0
($\bar{6}_z^{-1}|0,0,0$)

(6) $\bar{6}^+$ 0,0,z; 0,0,0
($\bar{6}_z|0,0,0$)

175 P6/m

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 0,0,z
($2_z|0,0,0$)

(5) 6^- 0,0,z
($6_z^{-1}|0,0,0$)

(6) 6^+ 0,0,z
($6_z|0,0,0$)

(7) $\bar{1}$
($\bar{1}|0,0,0$)

(8) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z|0,0,0$)

(9) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}|0,0,0$)

(10) m x,y,0
($m_z|0,0,0$)

(11) $\bar{6}^-$ 0,0,z; 0,0,0
($\bar{6}_z^{-1}|0,0,0$)

(12) $\bar{6}^+$ 0,0,z; 0,0,0
($\bar{6}_z|0,0,0$)

176 $P6_3/m$

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 (0,0,1/2) 0,0,z
($2_z|0,0,1/2$)

(5) 6^- (0,0,1/2) 0,0,z
($6_z^{-1}|0,0,1/2$)

(6) 6^+ (0,0,1/2) 0,0,z
($6_z|0,0,1/2$)

(7) $\overline{1}$
($\overline{1}|0,0,0$)

(8) $\overline{3}^+$ 0,0,z; 0,0,0
($\overline{3}_z|0,0,0$)

(9) $\overline{3}^-$ 0,0,z; 0,0,0
($\overline{3}_z^{-1}|0,0,0$)

(10) m x,y,1/4
($m_z|0,0,1/2$)

(11) $\overline{6}^-$ 0,0,z; 0,0,1/4
($\overline{6}_z^{-1}|0,0,1/2$)

(12) $\overline{6}^+$ 0,0,z; 0,0,1/4
($\overline{6}_z|0,0,1/2$)

177 P622

(1) 1
($1|0,0,0$)

(2) 3^+ 0,0,z
($3_z|0,0,0$)

(3) 3^- 0,0,z
($3_z^{-1}|0,0,0$)

(4) 2 0,0,z
($2_z|0,0,0$)

(5) 6^- 0,0,z
($6_z^{-1}|0,0,0$)

(6) 6^+ 0,0,z
($6_z|0,0,0$)

(7) 2 x,x,0
($2_{xy}|0,0,0$)

(8) 2 x,0,0
($2_x|0,0,0$)

(9) 2 0,y,0
($2_y|0,0,0$)

(10) 2 x,$\overline{x}$,0
($2_3|0,0,0$)

(11) 2 x,2x,0
($2_2|0,0,0$)

(12) 2 2x,x,0
($2_1|0,0,0$)

178 $P6_122$

(1) 1
($1|0,0,0$)

(2) 3^+ (0,0,1/3) 0,0,z
($3_z|0,0,1/3$)

(3) 3^- (0,0,2/3) 0,0,z
($3_z^{-1}|0,0,2/3$)

(4) 2 (0,0,1/2) 0,0,z
($2_z|0,0,1/2$)

(5) 6^- (0,0,5/6) 0,0,z
($6_z^{-1}|0,0,5/6$)

(6) 6^+ (0,0,1/6) 0,0,z
($6_z|0,0,1/6$)

(7) 2 x,x,1/6
($2_{xy}|0,0,1/3$)

(8) 2 x,0,0
($2_x|0,0,0$)

(9) 2 0,y,1/3
($2_y|0,0,2/3$)

(10) 2 x,$\overline{x}$,5/12
($2_3|0,0,5/6$)

(11) 2 x,2x,1/4
($2_2|0,0,1/2$)

(12) 2 2x,x,1/12
($2_1|0,0,1/6$)

179 $P6_522$

(1) 1
($1|0,0,0$)

(2) 3^+ (0,0,2/3) 0,0,z
($3_z|0,0,2/3$)

(3) 3^- (0,0,1/3) 0,0,z
($3_z^{-1}|0,0,1/3$)

(4) 2 (0,0,1/2) 0,0,z
($2_z|0,0,1/2$)

(5) 6^- (0,0,1/6) 0,0,z
($6_z^{-1}|0,0,1/6$)

(6) 6^+ (0,0,5/6) 0,0,z
($6_z|0,0,5/6$)

(7) 2 x,x,1/3
($2_{xy}|0,0,2/3$)

(8) 2 x,0,0
($2_x|0,0,0$)

(9) 2 0,y,1/6
($2_y|0,0,1/3$)

(10) 2 x,$\overline{x}$,1/12
($2_3|0,0,1/6$)

(11) 2 x,2x,1/4
($2_2|0,0,1/2$)

(12) 2 2x,x,5/12
($2_1|0,0,5/6$)

180 $P6_222$

(1) 1
$(1|0,0,0)$

(2) 3^+ $(0,0,2/3)$ 0,0,z
$(3_z|0,0,2/3)$

(3) 3^- $(0,0,1/3)$ 0,0,z
$(3_z^{-1}|0,0,1/3)$

(4) 2 0,0,z
$(2_z|0,0,0)$

(5) 6^- $(0,0,2/3)$ 0,0,z
$(6_z^{-1}|0,0,2/3)$

(6) 6^+ $(0,0,1/3)$ 0,0,z
$(6_z|0,0,1/3)$

(7) 2 x,x,1/3
$(2_{xy}|0,0,2/3)$

(8) 2 x,0,0
$(2_x|0,0,0)$

(9) 2 0,y,1/6
$(2_y|0,0,1/3)$

(10) 2 $x,\bar{x},1/3$
$(2_3|0,0,2/3)$

(11) 2 x,2x,0
$(2_2|0,0,0)$

(12) 2 2x,x,1/6
$(2_1|0,0,1/3)$

181 $P6_422$

(1) 1
$(1|0,0,0)$

(2) 3^+ $(0,0,1/3)$ 0,0,z
$(3_z|0,0,1/3)$

(3) 3^- $(0,0,2/3)$ 0,0,z
$(3_z^{-1}|0,0,2/3)$

(4) 2 0,0,z
$(2_z|0,0,0)$

(5) 6^- $(0,0,1/3)$ 0,0,z
$(6_z^{-1}|0,0,1/3)$

(6) 6^+ $(0,0,2/3)$ 0,0,z
$(6_z|0,0,2/3)$

(7) 2 x,x,1/6
$(2_{xy}|0,0,1/3)$

(8) 2 x,0,0
$(2_x|0,0,0)$

(9) 2 0,y,1/3
$(2_y|0,0,2/3)$

(10) 2 $x,\bar{x},1/6$
$(2_3|0,0,1/3)$

(11) 2 x,2x,0
$(2_2|0,0,0)$

(12) 2 2x,x,1/3
$(2_1|0,0,2/3)$

182 $P6_322$

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) 2 (0,0,1/2) 0,0,z
$(2_z|0,0,1/2)$

(5) 6^- (0,0,1/2) 0,0,z
$(6_z^{-1}|0,0,1/2)$

(6) 6^+ (0,0,1/2) 0,0,z
$(6_z|0,0,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 x,0,0
$(2_x|0,0,0)$

(9) 2 0,y,0
$(2_y|0,0,0)$

(10) 2 $x,\bar{x},1/4$
$(2_3|0,0,1/2)$

(11) 2 x,2x,1/4
$(2_2|0,0,1/2)$

(12) 2 2x,x,1/4
$(2_1|0,0,1/2)$

183 P6mm

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) 2 0,0,z
$(2_z|0,0,0)$

(5) 6^- 0,0,z
$(6_z^{-1}|0,0,0)$

(6) 6^+ 0,0,z
$(6_z|0,0,0)$

(7) m $x,\bar{x},z$
$(m_{xy}|0,0,0)$

(8) m x,2x,z
$(m_x|0,0,0)$

(9) m 2x,x,z
$(m_y|0,0,0)$

(10) m x,x,z
$(m_3|0,0,0)$

(11) m x,0,z
$(m_2|0,0,0)$

(12) m 0,y,z
$(m_1|0,0,0)$

184 P6cc

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 0,0,z
(2_z|0,0,0)

(5) 6^- 0,0,z
(6_z^{-1}|0,0,0)

(6) 6^+ 0,0,z
(6_z|0,0,0)

(7) c x,$\overline{x}$,z
(m_{xy}|0,0,1/2)

(8) c x,2x,z
(m_x|0,0,1/2)

(9) c 2x,x,z
(m_y|0,0,1/2)

(10) c x,x,z
(m_3|0,0,1/2)

(11) c x,0,z
(m_2|0,0,1/2)

(12) c 0,y,z
(m_1|0,0,1/2)

185 $P6_3cm$

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(5) 6^- (0,0,1/2) 0,0,z
(6_z^{-1}|0,0,1/2)

(6) 6^+ (0,0,1/2) 0,0,z
(6_z|0,0,1/2)

(7) c x,$\overline{x}$,z
(m_{xy}|0,0,1/2)

(8) c x,2x,z
(m_x|0,0,1/2)

(9) c 2x,x,z
(m_y|0,0,1/2)

(10) m x,x,z
(m_3|0,0,0)

(11) m x,0,z
(m_2|0,0,0)

(12) m 0,y,z
(m_1|0,0,0)

186 $P6_3mc$

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 (0,0,1/2) 0,0,z
(2_z|0,0,1/2)

(5) 6^- (0,0,1/2) 0,0,z
(6_z^{-1}|0,0,1/2)

(6) 6^+ (0,0,1/2) 0,0,z
(6_z|0,0,1/2)

(7) m x,$\overline{x}$,z
(m_{xy}|0,0,0)

(8) m x,2x,z
(m_x|0,0,0)

(9) m 2x,x,z
(m_y|0,0,0)

(10) c x,x,z
(m_3|0,0,1/2)

(11) c x,0,z
(m_2|0,0,1/2)

(12) c 0,y,z
(m_1|0,0,1/2)

187 $P\overline{6}m2$

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) m x,y,0
(m_z|0,0,0)

(5) $\overline{6}^-$ 0,0,z; 0,0,0
($\overline{6}_z^{-1}$|0,0,0)

(6) $\overline{6}^+$ 0,0,z; 0,0,0
($\overline{6}_z$|0,0,0)

(7) m x,$\overline{x}$,z
(m_{xy}|0,0,0)

(8) m x,2x,z
(m_x|0,0,0)

(9) m 2x,x,z
(m_y|0,0,0)

(10) 2 x,$\overline{x}$,0
(2_3|0,0,0)

(11) 2 x,2x,0
(2_2|0,0,0)

(12) 2 2x,x,0
(2_1|0,0,0)

188 $P\bar{6}c2$

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) m x,y,1/4
$(m_z|0,0,1/2)$

(5) $\bar{6}^-$ 0,0,z; 0,0,1/4
$(\bar{6}_z^{-1}|0,0,1/2)$

(6) $\bar{6}^+$ 0,0,z; 0,0,1/4
$(\bar{6}_z|0,0,1/2)$

(7) c x,$\bar{x}$,z
$(m_{xy}|0,0,1/2)$

(8) c x,2x,z
$(m_x|0,0,1/2)$

(9) c 2x,x,z
$(m_y|0,0,1/2)$

(10) 2 x,$\bar{x}$,0
$(2_3|0,0,0)$

(11) 2 x,2x,0
$(2_2|0,0,0)$

(12) 2 2x,x,0
$(2_1|0,0,0)$

189 $P\bar{6}2m$

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) m x,y,0
$(m_z|0,0,0)$

(5) $\bar{6}^-$ 0,0,z; 0,0,0
$(\bar{6}_z^{-1}|0,0,0)$

(6) $\bar{6}^+$ 0,0,z; 0,0,0
$(\bar{6}_z|0,0,0)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 x,0,0
$(2_x|0,0,0)$

(9) 2 0,y,0
$(2_y|0,0,0)$

(10) m x,x,z
$(m_3|0,0,0)$

(11) m x,0,z
$(m_2|0,0,0)$

(12) m 0,y,z
$(m_1|0,0,0)$

190 $P\bar{6}2c$

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) m x,y,1/4
$(m_z|0,0,1/2)$

(5) $\bar{6}^-$ 0,0,z; 0,0,1/4
$(\bar{6}_z^{-1}|0,0,1/2)$

(6) $\bar{6}^+$ 0,0,z; 0,0,1/4
$(\bar{6}_z|0,0,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 x,0,0
$(2_x|0,0,0)$

(9) 2 0,y,0
$(2_y|0,0,0)$

(10) c x,x,z
$(m_3|0,0,1/2)$

(11) c x,0,z
$(m_2|0,0,1/2)$

(12) c 0,y,z
$(m_1|0,0,1/2)$

191 P6/mmm

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 0,0,z
(2_z|0,0,0)

(5) 6^- 0,0,z
(6_z^{-1}|0,0,0)

(6) 6^+ 0,0,z
(6_z|0,0,0)

(7) 2 x,x,0
(2_{xy}|0,0,0)

(8) 2 x,0,0
(2_x|0,0,0)

(9) 2 0,y,0
(2_y|0,0,0)

(10) 2 x,$\overline{x}$,0
(2_3|0,0,0)

(11) 2 x,2x,0
(2_2|0,0,0)

(12) 2 2x,x,0
(2_1|0,0,0)

(13) $\overline{1}$ 0,0,0
($\overline{1}$|0,0,0)

(14) $\overline{3}^+$ 0,0,z; 0,0,0
($\overline{3}_z$|0,0,0)

(15) $\overline{3}^-$ 0,0,z; 0,0,0
($\overline{3}_z^{-1}$|0,0,0)

(16) m x,y,0
(m_z|0,0,0)

(17) $\overline{6}^-$ 0,0,z; 0,0,0
($\overline{6}_z^{-1}$|0,0,0)

(18) $\overline{6}^+$ 0,0,z; 0,0,0
($\overline{6}_z$|0,0,0)

(19) m x,$\overline{x}$,z
(m_{xy}|0,0,0)

(20) m x,2x,z
(m_x|0,0,0)

(21) m 2x,x,z
(m_y|0,0,0)

(22) m x,x,z
(m_3|0,0,0)

(23) m x,0,z
(m_2|0,0,0)

(24) m 0,y,z
(m_1|0,0,0)

192 P6/mcc

(1) 1
(1|0,0,0)

(2) 3^+ 0,0,z
(3_z|0,0,0)

(3) 3^- 0,0,z
(3_z^{-1}|0,0,0)

(4) 2 0,0,z
(2_z|0,0,0)

(5) 6^- 0,0,z
(6_z^{-1}|0,0,0)

(6) 6^+ 0,0,z
(6_z|0,0,0)

(7) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(8) 2 x,0,1/4
(2_x|0,0,1/2)

(9) 2 0,y,1/4
(2_y|0,0,1/2)

(10) 2 x,$\overline{x}$,1/4
(2_3|0,0,1/2)

(11) 2 x,2x,1/4
(2_2|0,0,1/2)

(12) 2 2x,x,1/4
(2_1|0,0,1/2)

(13) $\overline{1}$ 0,0,0
($\overline{1}$|0,0,0)

(14) $\overline{3}^+$ 0,0,z; 0,0,0
($\overline{3}_z$|0,0,0)

(15) $\overline{3}^-$ 0,0,z; 0,0,0
($\overline{3}_z^{-1}$|0,0,0)

(16) m x,y,0
(m_z|0,0,0)

(17) $\overline{6}^-$ 0,0,z; 0,0,0
($\overline{6}_z^{-1}$|0,0,0)

(18) $\overline{6}^+$ 0,0,z; 0,0,0
($\overline{6}_z$|0,0,0)

(19) c x,$\overline{x}$,z
(m_{xy}|0,0,1/2)

(20) c x,2x,z
(m_x|0,0,1/2)

(21) c 2x,x,z
(m_y|0,0,1/2)

(22) c x,x,z
(m_3|0,0,1/2)

(23) c x,0,z
(m_2|0,0,1/2)

(24) c 0,y,z
(m_1|0,0,1/2)

193 $P6_3/mcm$

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) 2 (0,0,1/2) 0,0,z
$(2_z|0,0,1/2)$

(5) 6^- (0,0,1/2) 0,0,z
$(6_z^{-1}|0,0,1/2)$

(6) 6^+ (0,0,1/2) 0,0,z
$(6_z|0,0,1/2)$

(7) 2 x,x,1/4
$(2_{xy}|0,0,1/2)$

(8) 2 x,0,1/4
$(2_x|0,0,1/2)$

(9) 2 0,y,1/4
$(2_y|0,0,1/2)$

(10) 2 $x,\bar{x},0$
$(2_3|0,0,0)$

(11) 2 x,2x,0
$(2_2|0,0,0)$

(12) 2 2x,x,0
$(2_1|0,0,0)$

(13) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(14) $\bar{3}^+$ 0,0,z; 0,0,0
$(\bar{3}_z|0,0,0)$

(15) $\bar{3}^-$ 0,0,z; 0,0,0
$(\bar{3}_z^{-1}|0,0,0)$

(16) m x,y,1/4
$(m_z|0,0,1/2)$

(17) $\bar{6}^-$ 0,0,z; 0,0,1/4
$(\bar{6}_z^{-1}|0,0,1/2)$

(18) $\bar{6}^+$ 0,0,z; 0,0,1/4
$(\bar{6}_z|0,0,1/2)$

(19) c $x,\bar{x},z$
$(m_{xy}|0,0,1/2)$

(20) c x,2x,z
$(m_x|0,0,1/2)$

(21) c 2x,x,z
$(m_y|0,0,1/2)$

(22) m x,x,z
$(m_3|0,0,0)$

(23) m x,0,z
$(m_2|0,0,0)$

(24) m 0,y,z
$(m_1|0,0,0)$

194 $P6_3/mmc$

(1) 1
$(1|0,0,0)$

(2) 3^+ 0,0,z
$(3_z|0,0,0)$

(3) 3^- 0,0,z
$(3_z^{-1}|0,0,0)$

(4) 2 (0,0,1/2) 0,0,z
$(2_z|0,0,1/2)$

(5) 6^- (0,0,1/2) 0,0,z
$(6_z^{-1}|0,0,1/2)$

(6) 6^+ (0,0,1/2) 0,0,z
$(6_z|0,0,1/2)$

(7) 2 x,x,0
$(2_{xy}|0,0,0)$

(8) 2 x,0,0
$(2_x|0,0,0)$

(9) 2 0,y,0
$(2_y|0,0,0)$

(10) 2 $x,\bar{x},1/4$
$(2_3|0,0,1/2)$

(11) 2 x,2x,1/4
$(2_2|0,0,1/2)$

(12) 2 2x,x,1/4
$(2_1|0,0,1/2)$

(13) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(14) $\bar{3}^+$ 0,0,z; 0,0,0
$(\bar{3}_z|0,0,0)$

(15) $\bar{3}^-$ 0,0,z; 0,0,0
$(\bar{3}_z^{-1}|0,0,0)$

(16) m x,y,1/4
$(m_z|0,0,1/2)$

(17) $\bar{6}^-$ 0,0,z; 0,0,1/4
$(\bar{6}_z^{-1}|0,0,1/2)$

(18) $\bar{6}^+$ 0,0,z; 0,0,1/4
$(\bar{6}_z|0,0,1/2)$

(19) m $x,\bar{x},z$
$(m_{xy}|0,0,0)$

(20) m x,2x,z
$(m_x|0,0,0)$

(21) m 2x,x,z
$(m_y|0,0,0)$

(22) c x,x,z
$(m_3|0,0,1/2)$

(23) c x,0,z
$(m_2|0,0,1/2)$

(24) c 0,y,z
$(m_1|0,0,1/2)$

195 P23

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

196 F23

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$-1/2,x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/2
(2_x|1/2,0,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+1/6,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$,x
($3_{xy\bar{z}}$|1/2,0,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6,x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ (1/3,1/3,-1/3)
$\overline{x}$+1/6,$\overline{x}$+1/3,x
($3_{xy\overline{z}}^{-1}$|1/2,1/2,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\overline{x}$+1/2,$\overline{x}$
($3_{\overline{x}yz}$|1/2,1/2,0)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\overline{z}}$|1/2,1/2,0)

(12) 3^- $\overline{x}$, x+1/2,$\overline{x}$
($3_{x\overline{y}z}$|1/2,1/2,0)

197 I23

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}$|0,0,0)

(11) 3^- $\overline{x}$,$\overline{x}$, x
($3_{xy\overline{z}}$|0,0,0)

(12) 3^- $\overline{x}$, x,$\overline{x}$
($3_{x\overline{y}z}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x
(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6)
$\overline{x}$+1/3,x+1/3,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,1/2,1/2)

(7) 3^+ (-1/6,1/6,1/6)
x+2/3,$\overline{x}$-1/3,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,1/2,1/2)

(8) 3^+ (1/6,1/6,-1/6)
$\overline{x}$+1/3,$\overline{x}$+2/3,x
($3_{xy\overline{z}}^{-1}$|1/2,1/2,1/2)

(9) 3^- (1/2,1/2,1/2) x,x,x
(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (-1/6,1/6,1/6)
x+1/3,$\overline{x}$+1/3,$\overline{x}$
($3_{\overline{x}yz}$|1/2,1/2,1/2)

(11) 3^- (1/6,1/6,-1/6)
$\overline{x}$+2/3,$\overline{x}$+1/3, x
($3_{xy\overline{z}}$|1/2,1/2,1/2)

(12) 3^- (1/6,-1/6,1/6)
$\overline{x}$-1/3, x+2/3,$\overline{x}$
($3_{x\overline{y}z}$|1/2,1/2,1/2)

198 $P2_13$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\overline{x}$-1/2,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\overline{x}$,$\overline{x}$+1/2,x
($3_{xy\overline{z}}^{-1}$|0,1/2,1/2)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\overline{x}$+1/6,$\overline{x}$
($3_{\overline{x}yz}$|0,1/2,1/2)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\overline{z}}$|1/2,1/2,0)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+1/3,$\overline{x}$
($3_{x\overline{y}z}$|1/2,0,1/2)

199 $I2_13$

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 (0,0,1/2) 1/4,0,z
($2_z|1/2,0,1/2$)

(3) 2 (0,1/2,0) 0,y,1/4
($2_y|0,1/2,1/2$)

(4) 2 (1/2,0,0) x,1/4,0
($2_x|1/2,1/2,0$)

(5) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}|1/2,1/2,0$)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}|1/2,0,1/2$)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}|0,1/2,1/2$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}|0,1/2,1/2$)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}|1/2,1/2,0$)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}|1/2,0,1/2$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 0,1/4,z
($2_z|0,1/2,0$)

(3) 2 1/4,y,0
($2_y|1/2,0,0$)

(4) 2 x,0,1/4
($2_x|0,0,1/2$)

(5) 3^+ (1/2,1/2,1/2) x,x,x
($3_{xyz}|1/2,1/2,1/2$)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$-1/6,x+1/3,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,0,1/2$)

(7) 3^+ (-1/6,1/6,1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,1/2,0$)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6,x
($3_{xy\bar{z}}^{-1}|1/2,0,0$)

(9) 3^- (1/2,1/2,1/2) x,x,x
($3_{xyz}^{-1}|1/2,1/2,1/2$)

(10) 3^- (1/6,-1/6,-1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}|1/2,0,0$)

(11) 3^- (-1/6,-1/6,1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}|0,0,1/2$)

(12) 3^- (-1/6,1/6,-1/6)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}|0,1/2,0$)

200 $Pm\bar{3}$

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 2 0,y,0
($2_y|0,0,0$)

(4) 2 x,0,0
($2_x|0,0,0$)

(5) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,0,0$)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,0,0$)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}|0,0,0$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}|0,0,0$)

(11) 3^- $\bar{x}$,$\bar{x}$, x
($3_{xy\bar{z}}|0,0,0$)

(12) 3^- $\bar{x}$, x,$\bar{x}$
($3_{x\bar{y}z}|0,0,0$)

(13) $\bar{1}$ 0,0,0
($\bar{1}|0,0,0$)

(14) m x,y,0
($m_z|0,0,0$)

(15) m x,0,z
($m_y|0,0,0$)

(16) m 0,y,z
($m_x|0,0,0$)

(17) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}|0,0,0$)

(18) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}|0,0,0$)

(19) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}|0,0,0$)

(20) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}|0,0,0$)

(21) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}|0,0,0$)

(22) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}|0,0,0$)

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$, x; 0,0,0
($\bar{3}_{xy\bar{z}}|0,0,0$)

(24) $\bar{3}^-$ $\bar{x}$, x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}|0,0,0$)

201 $Pn\bar{3}$ ORIGIN CHOICE 1

(1) 1
$(1|0,0,0)$

(2) 2 0,0,z
$(2_z|0,0,0)$

(3) 2 0,y,0
$(2_y|0,0,0)$

(4) 2 x,0,0
$(2_x|0,0,0)$

(5) 3^+ x,x,x
$(3_{xyz}|0,0,0)$

(6) 3^+ $\bar{x},x,\bar{x}$
$(3_{x\bar{y}z}^{-1}|0,0,0)$

(7) 3^+ $x,\bar{x},\bar{x}$
$(3_{\bar{x}yz}^{-1}|0,0,0)$

(8) 3^+ $\bar{x},\bar{x},x$
$(3_{xy\bar{z}}^{-1}|0,0,0)$

(9) 3^- x,x,x
$(3_{xyz}^{-1}|0,0,0)$

(10) 3^- $x,\bar{x},\bar{x}$
$(3_{\bar{x}yz}|0,0,0)$

(11) 3^- $\bar{x},\bar{x},x$
$(3_{xy\bar{z}}|0,0,0)$

(12) 3^- $\bar{x},x,\bar{x}$
$(3_{x\bar{y}z}|0,0,0)$

(13) $\bar{1}$ 1/4,1/4,1/4
$(\bar{1}|1/2,1/2,1/2)$

(14) n (1/2,1/2,0) x,y,1/4
$(m_z|1/2,1/2,1/2)$

(15) n (1/2,0,1/2) x,1/4,z
$(m_y|1/2,1/2,1/2)$

(16) n (0,1/2,1/2) 1/4,y,z
$(m_x|1/2,1/2,1/2)$

(17) $\bar{3}^+$ x,x,x;
1/4,1/4,1/4
$(\bar{3}_{xyz}|1/2,1/2,1/2)$

(18) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$;
-1/4,1/4,3/4
$(\bar{3}_{x\bar{y}z}^{-1}|1/2,1/2,1/2)$

(19) $\bar{3}^+$ $x,\bar{x}$+1,$\bar{x}$;
1/4,3/4,-1/4
$(\bar{3}_{\bar{x}yz}^{-1}|1/2,1/2,1/2)$

(20) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x;
3/4,-1/4,1/4
$(\bar{3}_{xy\bar{z}}^{-1}|1/2,1/2,1/2)$

(21) $\bar{3}^-$ x,x,x;
1/4,1/4,1/4
$(\bar{3}_{xyz}^{-1}|1/2,1/2,1/2)$

(22) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$;
1/4,-1/4,3/4
$(\bar{3}_{\bar{x}yz}|1/2,1/2,1/2)$

(23) $\bar{3}^-$ $\bar{x},\bar{x}$+1,x;
-1/4,3/4,1/4
$(\bar{3}_{xy\bar{z}}|1/2,1/2,1/2)$

(24) $\bar{3}^-$ $\bar{x}$+1,x,$\bar{x}$;
3/4,1/4,-1/4
$(\bar{3}_{x\bar{y}z}|1/2,1/2,1/2)$

201 $Pn\bar{3}$ ORIGIN CHOICE 2

(1) 1
$(1|0,0,0)$

(2) 2 1/4,1/4,z
$(2_z|1/2,1/2,0)$

(3) 2 1/4,y,1/4
$(2_y|1/2,0,1/2)$

(4) 2 x,1/4,1/4
$(2_x|0,1/2,1/2)$

(5) 3^+ x,x,x
$(3_{xyz}|0,0,0)$

(6) 3^+ $\bar{x},x$+1/2,$\bar{x}$
$(3_{x\bar{y}z}^{-1}|0,1/2,1/2)$

(7) 3^+ x+1/2,$\bar{x},\bar{x}$
$(3_{\bar{x}yz}^{-1}|1/2,1/2,0)$

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
$(3_{xy\bar{z}}^{-1}|1/2,0,1/2)$

(9) 3^- x,x,x
$(3_{xyz}^{-1}|0,0,0)$

(10) 3^- x+1/2,$\bar{x},\bar{x}$
$(3_{\bar{x}yz}|1/2,0,1/2)$

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2,x
$(3_{xy\bar{z}}|0,1/2,1/2)$

(12) 3^- $\bar{x},x$+1/2,$\bar{x}$
$(3_{x\bar{y}z}|1/2,1/2,0)$

(13) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(14) n (1/2,1/2,0) x,y,0
$(m_z|1/2,1/2,0)$

(15) n (1/2,0,1/2) x,0,z
$(m_y|1/2,0,1/2)$

(16) n (0,1/2,1/2) 0,y,z
$(m_x|0,1/2,1/2)$

(17) $\bar{3}^+$ x,x,x;
0,0,0
$(\bar{3}_{xyz}|0,0,0)$

(18) $\bar{3}^+$ $\bar{x}$-1,x+1/2,$\bar{x}$;
-1/2,0,1/2
$(\bar{3}_{x\bar{y}z}^{-1}|0,1/2,1/2)$

(19) $\bar{3}^+$ x-1/2,$\bar{x}$+1,$\bar{x}$;
0,1/2,-1/2
$(\bar{3}_{\bar{x}yz}^{-1}|1/2,1/2,0)$

(20) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$-1/2,x;
1/2,-1/2,0
$(\bar{3}_{xy\bar{z}}^{-1}|1/2,0,1/2)$

(21) $\bar{3}^-$ x,x,x;
0,0,0
$(\bar{3}_{xyz}^{-1}|0,0,0)$

(22) $\bar{3}^-$ x+1/2,$\bar{x}$-1,$\bar{x}$;
0,-1/2,1/2
$(\bar{3}_{\bar{x}yz}|1/2,0,1/2)$

(23) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2,x;
-1/2,1/2,0
$(\bar{3}_{xy\bar{z}}|0,1/2,1/2)$

(24) $\bar{3}^-$ $\bar{x}$+1,x-1/2,$\bar{x}$;
1/2,0,-1/2
$(\bar{3}_{x\bar{y}z}|1/2,1/2,0)$

202 $Fm\bar{3}$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(14) m x,y,0
(m_z|0,0,0)

(15) m x,0,z
(m_y|0,0,0)

(16) m 0,y,z
(m_x|0,0,0)

(17) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(18) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(19) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(20) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(21) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(22) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(24) $\bar{3}^-$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$-1/2, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

(13) $\bar{1}$ 0,1/4,1/4
($\bar{1}$|0,1/2,1/2)

(14) b x,y,1/4
(m_z|0,1/2,1/2)

(15) c x,1/4,z
(m_y|0,1/2,1/2)

(16) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

(17) $\bar{3}^+$ x,x+1/2,x;
0,1/2,0
($\bar{3}_{xyz}$|0,1/2,1/2)

(18) $\bar{3}^+$ $\bar{x}$-1,x+1/2,$\bar{x}$;
-1/2,0,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(19) $\bar{3}^+$ x,$\bar{x}$+1/2,$\bar{x}$;
0,1/2,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(20) $\bar{3}^+$ $\bar{x}$-1,$\bar{x}$+1/2,x;
1/2,0,1/2
($\bar{3}_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(21) $\bar{3}^-$ x-1/2,x-1/2,x;
0,0,1/2
($\bar{3}_{xyz}^{-1}$|0,1/2,1/2)

(22) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
0,0,1/2
($\bar{3}_{\bar{x}yz}$|0,1/2,1/2)

(23) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2, x;
-1/2,1/2,0
($\bar{3}_{xy\bar{z}}$|0,1/2,1/2)

(24) $\bar{3}^-$ $\bar{x}$+1/2, x+1/2,$\bar{x}$;
1/2,1/2,0
($\bar{3}_{x\bar{y}z}$|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\overline{x}$+1/6,x+1/6,$\overline{x}$
($3_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ x+1/2,$\overline{x}$-1/2,$\overline{x}$

($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\overline{x}$+1/2,$\overline{x}$+1/2,x

($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+1/2,$\overline{x}$,$\overline{x}$

($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- $\overline{x}$+1/2,$\overline{x}$, x

($3_{xy\bar{z}}$|1/2,0,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+1/3,$\overline{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) $\overline{1}$ 1/4,0,1/4
($\overline{1}$|1/2,0,1/2)

(14) a x,y,1/4
(m_z|1/2,0,1/2)

(15) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(16) c 1/4,y,z
(m_x|1/2,0,1/2)

(17) $\overline{3}^+$ x-1/2,x-1/2,x;
0,0,1/2
($\overline{3}_{xyz}$|1/2,0,1/2)

(18) $\overline{3}^+$ $\overline{x}$-1/2,x+1/2,$\overline{x}$;
0,0,1/2
($\overline{3}_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(19) $\overline{3}^+$ x+1/2,$\overline{x}$+1/2,$\overline{x}$;
1/2,1/2,0
($\overline{3}_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(20) $\overline{3}^+$ $\overline{x}$+1/2,$\overline{x}$-1/2,x;
1/2,-1/2,0
($\overline{3}_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(21) $\overline{3}^-$ x+1/2,x,x;
1/2,0,0
($\overline{3}_{xyz}^{-1}$|1/2,0,1/2)

(22) $\overline{3}^-$ x+1/2,$\overline{x}$-1,$\overline{x}$;
0,-1/2,1/2
($\overline{3}_{\bar{x}yz}$|1/2,0,1/2)

(23) $\overline{3}^-$ $\overline{x}$+1/2,$\overline{x}$+1, x;
0,1/2,1/2
($\overline{3}_{xy\bar{z}}$|1/2,0,1/2)

(24) $\overline{3}^-$ $\overline{x}$+1/2, x,$\overline{x}$;
1/2,0,0
($\overline{3}_{x\bar{y}z}$|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$

($3_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\overline{x}$,$\overline{x}$

($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ (1/3,1/3,-1/3)
$\overline{x}$+1/6,$\overline{x}$+1/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\overline{x}$+1/2,$\overline{x}$

($3_{\bar{x}yz}$|1/2,1/2,0)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- $\overline{x}$, x+1/2,$\overline{x}$

($3_{x\bar{y}z}$|1/2,1/2,0)

(13) $\overline{1}$ 1/4,1/4,0
($\overline{1}$|1/2,1/2,0)

(14) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(15) a x,1/4,z
(m_y|1/2,1/2,0)

(16) b 1/4,y,z
(m_x|1/2,1/2,0)

(17) $\overline{3}^+$ x+1/2,x,x;
1/2,0,0
($\overline{3}_{xyz}$|1/2,1/2,0)

(18) $\overline{3}^+$ $\overline{x}$-1/2,x+1,$\overline{x}$;
0,1/2,1/2
($\overline{3}_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(19) $\overline{3}^+$ x-1/2,$\overline{x}$+1,$\overline{x}$;
0,1/2,-1/2
($\overline{3}_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(20) $\overline{3}^+$ $\overline{x}$+1/2,$\overline{x}$,x;
1/2,0,0
($\overline{3}_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(21) $\overline{3}^-$ x,x+1/2,x;
0,1/2,0
($\overline{3}_{xyz}^{-1}$|1/2,1/2,0)

(22) $\overline{3}^-$ x+1,$\overline{x}$-1/2,$\overline{x}$;
1/2,0,1/2
($\overline{3}_{\bar{x}yz}$|1/2,1/2,0)

(23) $\overline{3}^-$ $\overline{x}$,$\overline{x}$+1/2, x;
0,1/2,0
($\overline{3}_{xy\bar{z}}$|1/2,1/2,0)

(24) $\overline{3}^-$ $\overline{x}$+1, x-1/2,$\overline{x}$;
1/2,0,-1/2
($\overline{3}_{x\bar{y}z}$|1/2,1/2,0)

203 Fd$\bar{3}$ ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 2 0,y,0
($2_y|0,0,0$)

(4) 2 x,0,0
($2_x|0,0,0$)

(5) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,0,0$)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,0,0$)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}|0,0,0$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}|0,0,0$)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}|0,0,0$)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}|0,0,0$)

(13) $\bar{1}$ 1/8,1/8,1/8
($\bar{1}|1/4,1/4,1/4$)

(14) d (1/4,1/4,0) x,y,1/8
($m_z|1/4,1/4,1/4$)

(15) d (1/4,0,1/4) x,1/8,z
($m_y|1/4,1/4,1/4$)

(16) d (0,1/4,1/4) 1/8,y,z
($m_x|1/4,1/4,1/4$)

(17) $\bar{3}^+$ x,x,x;
1/8,1/8,1/8
($\bar{3}_{xyz}|1/4,1/4,1/4$)

(18) $\bar{3}^+$ $\bar{x}$-1/2,x+1/2,$\bar{x}$;
-1/8,1/8,3/8
($\bar{3}_{x\bar{y}z}^{-1}|1/4,1/4,1/4$)

(19) $\bar{3}^+$ x,$\bar{x}$+1/2,$\bar{x}$;
1/8,3/8,-1/8
($\bar{3}_{\bar{x}yz}^{-1}|1/4,1/4,1/4$)

(20) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$,x;
3/8,-1/8,1/8
($\bar{3}_{xy\bar{z}}^{-1}|1/4,1/4,1/4$)

(21) $\bar{3}^-$ x,x,x;
1/8,1/8,1/8
($\bar{3}_{xyz}^{-1}|1/4,1/4,1/4$)

(22) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
1/8,-1/8,3/8
($\bar{3}_{\bar{x}yz}|1/4,1/4,1/4$)

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2,x;
-1/8,3/8,1/8
($\bar{3}_{xy\bar{z}}|1/4,1/4,1/4$)

(24) $\bar{3}^-$ $\bar{x}$+1/2,x,$\bar{x}$;
3/8,1/8,-1/8
($\bar{3}_{x\bar{y}z}|1/4,1/4,1/4$)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
($1|0,1/2,1/2$)

(2) 2 (0,0,1/2) 0,1/4,z
($2_z|0,1/2,1/2$)

(3) 2 (0,1/2,0) 0,y,1/4
($2_y|0,1/2,1/2$)

(4) 2 x,1/4,1/4
($2_x|0,1/2,1/2$)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
($3_{xyz}|0,1/2,1/2$)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,1/2,1/2$)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,1/2,1/2$)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}|0,1/2,1/2$)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
($3_{xyz}^{-1}|0,1/2,1/2$)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}|0,1/2,1/2$)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}|0,1/2,1/2$)

(12) 3^- $\bar{x}$-1/2,x+1/2,$\bar{x}$
($3_{x\bar{y}z}|0,1/2,1/2$)

(13) $\bar{1}$ 1/8,3/8,3/8
($\bar{1}|1/4,3/4,3/4$)

(14) d (1/4,3/4,0) x,y,3/8
($m_z|1/4,3/4,3/4$)

(15) d (1/4,0,3/4) x,3/8,z
($m_y|1/4,3/4,3/4$)

(16) d (0,3/4,3/4) 1/8,y,z
($m_x|1/4,3/4,3/4$)

(17) $\bar{3}^+$ x,x+1/2,x;
1/8,5/8,1/8
($\bar{3}_{xyz}|1/4,3/4,3/4$)

(18) $\bar{3}^+$ $\bar{x}$-3/2,x+1,$\bar{x}$;
-5/8,1/8,7/8
($\bar{3}_{x\bar{y}z}^{-1}|1/4,3/4,3/4$)

(19) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$;
1/8,7/8,-1/8
($\bar{3}_{\bar{x}yz}^{-1}|1/4,3/4,3/4$)

(20) $\bar{3}^+$ $\bar{x}$+3/2,$\bar{x}$+1/2,x;
7/8,-1/8,5/8
($\bar{3}_{xy\bar{z}}^{-1}|1/4,3/4,3/4$)

(21) $\bar{3}^-$ x-1/2,x-1/2,x;
1/8,1/8,5/8
($\bar{3}_{xyz}^{-1}|1/4,3/4,3/4$)

(22) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$;
1/8,-1/8,7/8
($\bar{3}_{\bar{x}yz}|1/4,3/4,3/4$)

(23) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1,x;
-5/8,7/8,1/8
($\bar{3}_{xy\bar{z}}|1/4,3/4,3/4$)

(24) $\bar{3}^-$ $\bar{x}$+1,x+1/2,$\bar{x}$;
7/8,5/8,-1/8
($\bar{3}_{x\bar{y}z}|1/4,3/4,3/4$)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\overline{x}$+1/6,x+1/6,$\overline{x}$
($3_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ x+1/2,$\overline{x}$-1/2,$\overline{x}$

($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\overline{x}$+1/2,$\overline{x}$+1/2,x

($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+1/2,$\overline{x}$,$\overline{x}$

($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- $\overline{x}$+1/2,$\overline{x}$, x

($3_{xy\bar{z}}$|1/2,0,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+1/3,$\overline{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) $\overline{1}$ 3/8,1/8,3/8
($\overline{1}$|3/4,1/4,3/4)

(14) d (3/4,1/4,0) x,y,3/8
(m_z|3/4,1/4,3/4)

(15) d (3/4,0,3/4) x,1/8,z
(m_y|3/4,1/4,3/4)

(16) d (0,1/4,3/4) 3/8,y,z
(m_x|3/4,1/4,3/4)

(17) $\overline{3}^+$ x-1/2,x-1/2,x;
1/8,1/8,5/8
($\overline{3}_{xyz}$|3/4,1/4,3/4)

(18) $\overline{3}^+$ $\overline{x}$-1,x+1,$\overline{x}$;
-1/8,1/8,7/8
($\overline{3}_{x\bar{y}z}^{-1}$|3/4,1/4,3/4)

(19) $\overline{3}^+$ x+1/2,$\overline{x}$+1,$\overline{x}$;
5/8,7/8,-1/8
($\overline{3}_{\bar{x}yz}^{-1}$|3/4,1/4,3/4)

(20) $\overline{3}^+$ $\overline{x}$+1,$\overline{x}$-1/2,x;
7/8,-5/8,1/8
($\overline{3}_{xy\bar{z}}^{-1}$|3/4,1/4,3/4)

(21) $\overline{3}^-$ x+1/2,x,x;
5/8,1/8,1/8
($\overline{3}_{xyz}^{-1}$|3/4,1/4,3/4)

(22) $\overline{3}^-$ x+1,$\overline{x}$-3/2,$\overline{x}$;
1/8,-5/8,7/8
($\overline{3}_{\bar{x}yz}$|3/4,1/4,3/4)

(23) $\overline{3}^-$ $\overline{x}$+1/2,$\overline{x}$+3/2, x;
-1/8,7/8,5/8
($\overline{3}_{xy\bar{z}}$|3/4,1/4,3/4)

(24) $\overline{3}^-$ $\overline{x}$+1, x,$\overline{x}$;
7/8,1/8,-1/8
($\overline{3}_{x\bar{y}z}$|3/4,1/4,3/4)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$

($3_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\overline{x}$,$\overline{x}$

($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ (1/3,1/3,-1/3)
$\overline{x}$+1/6,$\overline{x}$+1/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\overline{x}$+1/2,$\overline{x}$

($3_{\bar{x}yz}$|1/2,1/2,0)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- $\overline{x}$, x+1/2,$\overline{x}$

($3_{x\bar{y}z}$|1/2,1/2,0)

(13) $\overline{1}$ 3/8,3/8,1/8
($\overline{1}$|3/4,3/4,1/4)

(14) d (3/4,3/4,0) x,y,1/8
(m_z|3/4,3/4,1/4)

(15) d (3/4,0,1/4) x,3/8,z
(m_y|3/4,3/4,1/4)

(16) d (0,3/4,1/4) 3/8,y,z
(m_x|3/4,3/4,1/4)

(17) $\overline{3}^+$ x+1/2,x,x;
5/8,1/8,1/8
($\overline{3}_{xyz}$|3/4,3/4,1/4)

(18) $\overline{3}^+$ $\overline{x}$-1,x+3/2,$\overline{x}$;
-1/8,5/8,7/8
($\overline{3}_{x\bar{y}z}^{-1}$|3/4,3/4,1/4)

(19) $\overline{3}^+$ x-1/2,$\overline{x}$+3/2,$\overline{x}$;
1/8,7/8,-5/8
($\overline{3}_{\bar{x}yz}^{-1}$|3/4,3/4,1/4)

(20) $\overline{3}^+$ $\overline{x}$+1,$\overline{x}$,x;
7/8,-1/8,1/8
($\overline{3}_{xy\bar{z}}^{-1}$|3/4,3/4,1/4)

(21) $\overline{3}^-$ x,x+1/2,x;
1/8,5/8,1/8
($\overline{3}_{xyz}^{-1}$|3/4,3/4,1/4)

(22) $\overline{3}^-$ x+3/2,$\overline{x}$-1,$\overline{x}$;
5/8,-1/8,7/8
($\overline{3}_{\bar{x}yz}$|3/4,3/4,1/4)

(23) $\overline{3}^-$ $\overline{x}$,$\overline{x}$+1, x;
-1/8,7/8,1/8
($\overline{3}_{xy\bar{z}}$|3/4,3/4,1/4)

(24) $\overline{3}^-$ $\overline{x}$+3/2, x-1/2,$\overline{x}$;
7/8,1/8,-5/8
($\overline{3}_{x\bar{y}z}$|3/4,3/4,1/4)

203 $Fd\bar{3}$ ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
$(1|0,0,0)$

(2) 2 1/8,1/8,z
$(2_z|1/4,1/4,0)$

(3) 2 1/8,y,1/8
$(2_y|1/4,0,1/4)$

(4) 2 x,1/8,1/8
$(2_x|0,1/4,1/4)$

(5) 3^+ x,x,x
$(3_{xyz}|0,0,0)$

(6) 3^+ $\bar{x}$,x+1/4,$\bar{x}$
$(3_{x\bar{y}z}^{-1}|0,1/4,1/4)$

(7) 3^+ x+1/4,$\bar{x}$,$\bar{x}$
$(3_{\bar{x}yz}^{-1}|1/4,1/4,0)$

(8) 3^+ $\bar{x}$+1/4,$\bar{x}$+1/4,x
$(3_{xy\bar{z}}^{-1}|1/4,0,1/4)$

(9) 3^- x,x,x
$(3_{xyz}^{-1}|0,0,0)$

(10) 3^- x+1/4,$\bar{x}$,$\bar{x}$
$(3_{\bar{x}yz}|1/4,0,1/4)$

(11) 3^- $\bar{x}$+1/4,$\bar{x}$+1/4, x
$(3_{xy\bar{z}}|0,1/4,1/4)$

(12) 3^- $\bar{x}$, x+1/4,$\bar{x}$
$(3_{x\bar{y}z}|1/4,1/4,0)$

(13) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(14) d (3/4,3/4,0) x,y,0
$(m_z|3/4,3/4,0)$

(15) d (3/4,0,3/4) x,0,z
$(m_y|3/4,0,3/4)$

(16) d (0,3/4,3/4) 0,y,z
$(m_x|0,3/4,3/4)$

(17) $\bar{3}^+$ x,x,x;
0,0,0
$(\bar{3}_{xyz}|0,0,0)$

(18) $\bar{3}^+$ $\bar{x}$-3/2,x+3/4,$\bar{x}$;
-3/4,0,3/4
$(\bar{3}_{x\bar{y}z}^{-1}|0,3/4,3/4)$

(19) $\bar{3}^+$ x-3/4,$\bar{x}$+3/2,$\bar{x}$;
0,3/4,-3/4
$(\bar{3}_{\bar{x}yz}^{-1}|3/4,3/4,0)$

(20) $\bar{3}^+$ $\bar{x}$+3/4,$\bar{x}$-3/4,x;
3/4,-3/4,0
$(\bar{3}_{xy\bar{z}}^{-1}|3/4,0,3/4)$

(21) $\bar{3}^-$ x,x,x;
0,0,0
$(\bar{3}_{xyz}^{-1}|0,0,0)$

(22) $\bar{3}^-$ x+3/4,$\bar{x}$-3/2,$\bar{x}$;
0,-3/4,3/4
$(\bar{3}_{\bar{x}yz}|3/4,0,3/4)$

(23) $\bar{3}^-$ $\bar{x}$-3/4,$\bar{x}$+3/4, x;
-3/4,3/4,0
$(\bar{3}_{xy\bar{z}}|0,3/4,3/4)$

(24) $\bar{3}^-$ $\bar{x}$+3/2, x-3/4,$\bar{x}$;
3/4,0,-3/4
$(\bar{3}_{x\bar{y}z}|3/4,3/4,0)$

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
$(1|0,1/2,1/2)$

(2) 2 (0,0,1/2) 1/8,3/8,z
$(2_z|1/4,3/4,1/2)$

(3) 2 (0,1/2,0) 1/8,y,3/8
$(2_y|1/4,1/2,3/4)$

(4) 2 x,3/8,3/8
$(2_x|0,3/4,3/4)$

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
$(3_{xyz}|0,1/2,1/2)$

(6) 3^+ $\bar{x}$,x+3/4,$\bar{x}$
$(3_{x\bar{y}z}^{-1}|0,3/4,3/4)$

(7) 3^+ (-1/3,1/3,1/3)
x+7/12,$\bar{x}$-1/6,$\bar{x}$
$(3_{\bar{x}yz}^{-1}|1/4,3/4,1/2)$

(8) 3^+ $\bar{x}$+1/4,$\bar{x}$+3/4,x
$(3_{xy\bar{z}}^{-1}|1/4,1/2,3/4)$

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
$(3_{xyz}^{-1}|0,1/2,1/2)$

(10) 3^- (-1/3,1/3,1/3)
x+5/12,$\bar{x}$+1/6,$\bar{x}$
$(3_{\bar{x}yz}|1/4,1/2,3/4)$

(11) 3^- $\bar{x}$+3/4,$\bar{x}$+3/4, x
$(3_{xy\bar{z}}|0,3/4,3/4)$

(12) 3^- $\bar{x}$-1/2, x+3/4,$\bar{x}$
$(3_{x\bar{y}z}|1/4,3/4,1/2)$

(13) $\bar{1}$ 0,1/4,1/4
$(\bar{1}|0,1/2,1/2)$

(14) d (3/4,1/4,0) x,y,1/4
$(m_z|3/4,1/4,1/2)$

(15) d (3/4,0,1/4) x,1/4,z
$(m_y|3/4,1/2,1/4)$

(16) d (0,1/4,1/4) 0,y,z
$(m_x|0,1/4,1/4)$

(17) $\bar{3}^+$ x,x+1/2,x;
0,1/2,0
$(\bar{3}_{xyz}|0,1/2,1/2)$

(18) $\bar{3}^+$ $\bar{x}$-1/2,x+1/4,$\bar{x}$;
-1/4,0,1/4
$(\bar{3}_{x\bar{y}z}^{-1}|0,1/4,1/4)$

(19) $\bar{3}^+$ x+1/4,$\bar{x}$+1,$\bar{x}$;
1/2,3/4,-1/4
$(\bar{3}_{\bar{x}yz}^{-1}|3/4,1/4,1/2)$

(20) $\bar{3}^+$ $\bar{x}$+3/4,$\bar{x}$-1/4,x;
3/4,-1/4,0
$(\bar{3}_{xy\bar{z}}^{-1}|3/4,1/2,1/4)$

(21) $\bar{3}^-$ x-1/2,x-1/2,x;
0,0,1/2
$(\bar{3}_{xyz}^{-1}|0,1/2,1/2)$

(22) $\bar{3}^-$ x+5/4,$\bar{x}$-1,$\bar{x}$;
1/2,-1/4,3/4
$(\bar{3}_{\bar{x}yz}|3/4,1/2,1/4)$

(23) $\bar{3}^-$ $\bar{x}$-1/4,$\bar{x}$+1/4, x;
-1/4,1/4,0
$(\bar{3}_{xy\bar{z}}|0,1/4,1/4)$

(24) $\bar{3}^-$ $\bar{x}$+1, x-1/4,$\bar{x}$;
3/4,0,-1/4
$(\bar{3}_{x\bar{y}z}|3/4,1/4,1/2)$

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 3/8,1/8,z
(2_z|3/4,1/4,12)

(3) 2 3/8,y,3/8
(2_y|3/4,0,3/4)

(4) 2 (1/2,0,0) x,1/8,3/8
(2_x|1/2,1/4,3/4)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\overline{x}$+1/6,x+5/12,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,1/4,3/4)

(7) 3^+ x+3/4,$\overline{x}$-1/2,$\overline{x}$

($3_{\overline{x}yz}^{-1}$|3/4,1/4,12)

(8) 3^+ $\overline{x}$+3/4,$\overline{x}$+3/4,x

($3_{xy\overline{z}}^{-1}$|3/4,0,3/4)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+3/4,$\overline{x}$,$\overline{x}$

($3_{\overline{x}yz}$|3/4,0,3/4)

(11) 3^- $\overline{x}$+3/4,$\overline{x}$+1/4, x

($3_{xy\overline{z}}$|1/2,1/4,3/4)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+7/12,$\overline{x}$
($3_{x\overline{y}z}$|3/4,1/4,12)

(13) $\overline{1}$ 1/4,0,1/4
($\overline{1}$|1/2,0,1/2)

(14) d (1/4,3/4,0) x,y,1/4
(m_z|1/4,3/4,1/2)

(15) d (1/4,0,1/4) x,0,z
(m_y|1/4,0,1/4)

(16) d (0,3/4,1/4) 1/4,y,z
(m_x|1/2,3/4,1/4)

(17) $\overline{3}^+$ x-1/2,x-1/2,x;
0,0,1/2
($\overline{3}_{xyz}$|1/2,0,1/2)

(18) $\overline{3}^+$ $\overline{x}$-1,x+5/4,$\overline{x}$;
-1/4,1/2,3/4
($\overline{3}_{x\overline{y}z}^{-1}$|1/2,3/4,1/4)

(19) $\overline{3}^+$ x-1/4,$\overline{x}$+1,$\overline{x}$;
0,3/4,-1/4
($\overline{3}_{\overline{x}yz}^{-1}$|1/4,3/4,1/2)

(20) $\overline{3}^+$ $\overline{x}$+1/4,$\overline{x}$-1/4,x;
1/4,-1/4,0
($\overline{3}_{xy\overline{z}}^{-1}$|1/4,0,1/4)

(21) $\overline{3}^-$ x+1/2,x,x;
1/2,0,0
($\overline{3}_{xyz}^{-1}$|1/2,0,1/2)

(22) $\overline{3}^-$ x+1/4,$\overline{x}$-1/2,$\overline{x}$;
0,-1/4,1/4
($\overline{3}_{\overline{x}yz}$|1/4,0,1/4)

(23) $\overline{3}^-$ $\overline{x}$-1/4,$\overline{x}$+3/4, x;
-1/4,3/4,0
($\overline{3}_{xy\overline{z}}$|1/2,3/4,1/4)

(24) $\overline{3}^-$ $\overline{x}$+1, x+1/4,$\overline{x}$;
3/4,1/2,-1/4
($\overline{3}_{x\overline{y}z}$|1/4,3/4,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 3/8,3/8,z
(2_z|3/4,3/4,0)

(3) 2 (0,1/2,0) 3/8,y,1/8
(2_y|3/4,1/2,1/4)

(4) 2 (1/2,0,0) x,3/8,1/8
(2_x|1/2,3/4,1/4)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$+1/2,x+1/4,$\overline{x}$

($3_{x\overline{y}z}^{-1}$|1/2,3/4,1/4)

(7) 3^+ x+3/4,$\overline{x}$,$\overline{x}$

($3_{\overline{x}yz}^{-1}$|3/4,3/4,0)

(8) 3^+ (1/3,1/3,-1/3)
$\overline{x}$+5/12,$\overline{x}$+7/12,x
($3_{xy\overline{z}}^{-1}$|3/4,1/2,1/4)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x+1/4,$\overline{x}$+1/2,$\overline{x}$

($3_{\overline{x}yz}$|3/4,1/2,1/4)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+7/12,$\overline{x}$+5/12, x
($3_{xy\overline{z}}$|1/2,3/4,1/4)

(12) 3^- $\overline{x}$, x+3/4,$\overline{x}$

($3_{x\overline{y}z}$|3/4,3/4,0)

(13) $\overline{1}$ 1/4,1/4,0
($\overline{1}$|1/2,1/2,0)

(14) d (1/4,1/4,0) x,y,0
(m_z|1/4,1/4,0)

(15) d (1/4,0,3/4) x,1/4,z
(m_y|1/4,1/2,3/4)

(16) d (0,1/4,3/4) 1/4,y,z
(m_x|1/2,1/4,3/4)

(17) $\overline{3}^+$ x+1/2,x,x;
1/2,0,0
($\overline{3}_{xyz}$|1/2,1/2,0)

(18) $\overline{3}^+$ $\overline{x}$-1,x+3/4,$\overline{x}$;
-1/4,0,3/4
($\overline{3}_{x\overline{y}z}^{-1}$|1/2,1/4,3/4)

(19) $\overline{3}^+$ x-1/4,$\overline{x}$+1/2,$\overline{x}$;
0,1/4,-1/4
($\overline{3}_{\overline{x}yz}^{-1}$|1/4,1/4,0)

(20) $\overline{3}^+$ $\overline{x}$+5/4,$\overline{x}$+1/4,x;
3/4,-1/4,1/2
($\overline{3}_{xy\overline{z}}^{-1}$|1/4,1/2,3/4)

(21) $\overline{3}^-$ x,x+1/2,x;
0,1/2,0
($\overline{3}_{xyz}^{-1}$|1/2,1/2,0)

(22) $\overline{3}^-$ x+3/4,$\overline{x}$-1,$\overline{x}$;
0,-1/4,3/4
($\overline{3}_{\overline{x}yz}$|1/4,1/2,3/4)

(23) $\overline{3}^-$ $\overline{x}$+1/4,$\overline{x}$+5/4, x;
-1/4,3/4,1/2
($\overline{3}_{xy\overline{z}}$|1/2,1/4,3/4)

(24) $\overline{3}^-$ $\overline{x}$+1/2, x-1/4,$\overline{x}$;
1/4,0,-1/4
($\overline{3}_{x\overline{y}z}$|1/4,1/4,0)

204 Im$\bar{3}$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(14) m x,y,0
(m_z|0,0,0)

(15) m x,0,z
(m_y|0,0,0)

(16) m 0,y,z
(m_x|0,0,0)

(17) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(18) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(19) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(20) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(21) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(22) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(24) $\bar{3}^-$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x
(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$+1/3,x+1/3,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/2,1/2)

(7) 3^+ (-1/6,1/6,1/6)
x+2/3,$\bar{x}$-1/3,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+2/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(9) 3^- (1/2,1/2,1/2) x,x,x
(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (-1/6,1/6,1/6)
x+1/3,$\bar{x}$+1/3,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,1/2)

(11) 3^- (1/6,1/6,-1/6)
$\bar{x}$+2/3,$\bar{x}$+1/3, x
($3_{xy\bar{z}}$|1/2,1/2,1/2)

(12) 3^- (1/6,-1/6,1/6)
$\bar{x}$-1/3, x+2/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,1/2)

(13) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(14) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(15) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(16) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(17) $\bar{3}^+$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}$|1/2,1/2,1/2)

(18) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$;
-1/4,1/4,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/2,1/2)

(19) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$;
1/4,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(20) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x;
3/4,-1/4,1/4
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(21) $\bar{3}^-$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}^{-1}$|1/2,1/2,1/2)

(22) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$;
1/4,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|1/2,1/2,1/2)

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1, x;
-1/4,3/4,1/4
($\bar{3}_{xy\bar{z}}$|1/2,1/2,1/2)

(24) $\bar{3}^-$ $\bar{x}$+1, x,$\bar{x}$;
3/4,1/4,-1/4
($\bar{3}_{x\bar{y}z}$|1/2,1/2,1/2)

205 $Pa\bar{3}$

(1) 1
$(1|0,0,0)$

(2) 2 (0,0,1/2) 1/4,0,z
$(2_z|1/2,0,1/2)$

(3) 2 (0,1/2,0) 0,y,1/4
$(2_y|0,1/2,1/2)$

(4) 2 (1/2,0,0) x,1/4,0
$(2_x|1/2,1/2,0)$

(5) 3^+ x,x,x
$(3_{xyz}|0,0,0)$

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
$(3_{x\bar{y}\bar{z}}{}^{-1}|1/2,1/2,0)$

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
$(3_{\bar{x}yz}{}^{-1}|1/2,0,1/2)$

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
$(3_{xy\bar{z}}{}^{-1}|0,1/2,1/2)$

(9) 3^- x,x,x
$(3_{xyz}{}^{-1}|0,0,0)$

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
$(3_{\bar{x}yz}|0,1/2,1/2)$

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
$(3_{xy\bar{z}}|1/2,1/2,0)$

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
$(3_{x\bar{y}z}|1/2,0,1/2)$

(13) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(14) a x,y,1/4
$(m_z|1/2,0,1/2)$

(15) c x,1/4,z
$(m_y|0,1/2,1/2)$

(16) b 1/4,y,z
$(m_x|1/2,1/2,0)$

(17) $\bar{3}^+$ x,x,x;
0,0,0
$(\bar{3}_{xyz}|0,0,0)$

(18) $\bar{3}^+$ $\bar{x}$-1/2,x+1,$\bar{x}$;
0,1/2,1/2
$(\bar{3}_{x\bar{y}\bar{z}}{}^{-1}|1/2,1/2,0)$

(19) $\bar{3}^+$ x+1/2,$\bar{x}$+1/2,$\bar{x}$;
1/2,1/2,0
$(\bar{3}_{\bar{x}yz}{}^{-1}|1/2,0,1/2)$

(20) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$+1/2,x;
1/2,0,1/2
$(\bar{3}_{xy\bar{z}}{}^{-1}|0,1/2,1/2)$

(21) $\bar{3}^-$ x,x,x;
0,0,0
$(\bar{3}_{xyz}{}^{-1}|0,0,0)$

(22) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
0,0,1/2
$(\bar{3}_{\bar{x}yz}|0,1/2,1/2)$

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2, x;
0,1/2,0
$(\bar{3}_{xy\bar{z}}|1/2,1/2,0)$

(24) $\bar{3}^-$ $\bar{x}$+1/2, x,$\bar{x}$;
1/2,0,0
$(\bar{3}_{x\bar{y}z}|1/2,0,1/2)$

206 $Ia\bar{3}$

For (0,0,0) + set

(1) 1
$(1|0,0,0)$

(2) 2 (0,0,1/2) 1/4,0,z
$(2_z|1/2,0,1/2)$

(3) 2 (0,1/2,0) 0,y,1/4
$(2_y|0,1/2,1/2)$

(4) 2 (1/2,0,0) x,1/4,0
$(2_x|1/2,1/2,0)$

(5) 3^+ x,x,x
$(3_{xyz}|0,0,0)$

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
$(3_{x\bar{y}\bar{z}}{}^{-1}|1/2,1/2,0)$

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
$(3_{\bar{x}yz}{}^{-1}|1/2,0,1/2)$

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
$(3_{xy\bar{z}}{}^{-1}|0,1/2,1/2)$

(9) 3^- x,x,x
$(3_{xyz}{}^{-1}|0,0,0)$

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
$(3_{\bar{x}yz}|0,1/2,1/2)$

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
$(3_{xy\bar{z}}|1/2,1/2,0)$

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
$(3_{x\bar{y}z}|1/2,0,1/2)$

(13) $\bar{1}$ 0,0,0
$(\bar{1}|0,0,0)$

(14) a x,y,1/4
$(m_z|1/2,0,1/2)$

(15) c x,1/4,z
$(m_y|0,1/2,1/2)$

(16) b 1/4,y,z
$(m_x|1/2,1/2,0)$

(17) $\bar{3}^+$ x,x,x;
0,0,0
$(\bar{3}_{xyz}|0,0,0)$

(18) $\bar{3}^+$ $\bar{x}$-1/2,x+1,$\bar{x}$;
0,1/2,1/2
$(\bar{3}_{x\bar{y}\bar{z}}{}^{-1}|1/2,1/2,0)$

(19) $\bar{3}^+$ x+1/2,$\bar{x}$+1/2,$\bar{x}$;
1/2,1/2,0
$(\bar{3}_{\bar{x}yz}{}^{-1}|1/2,0,1/2)$

(20) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$+1/2,x;
1/2,0,1/2
$(\bar{3}_{xy\bar{z}}{}^{-1}|0,1/2,1/2)$

(21) $\bar{3}^-$ x,x,x;
0,0,0
$(\bar{3}_{xyz}{}^{-1}|0,0,0)$

(22) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
0,0,1/2
$(\bar{3}_{\bar{x}yz}|0,1/2,1/2)$

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2, x;
0,1/2,0
$(\bar{3}_{xy\bar{z}}|1/2,1/2,0)$

(24) $\bar{3}^-$ $\bar{x}$+1/2, x,$\bar{x}$;
1/2,0,0
$(\bar{3}_{x\bar{y}z}|1/2,0,1/2)$

For (1/2,1/2,1/2) + set

(1) 1
(1|1/2,1/2,1/2)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 1/4,y,0
(2_y|1/2,0,0)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x
(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$-1/6,x+1/3,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|0,0,1/2)

(7) 3^+ (-1/6,1/6,1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,0)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6,x
($3_{xy\bar{z}}^{-1}$|1/2,0,0)

(9) 3^- (1/2,1/2,1/2) x,x,x
(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (1/6,-1/6,-1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,0)

(11) 3^- (-1/6,-1/6,1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}$|0,0,1/2)

(12) 3^- (-1/6,1/6,-1/6)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,0)

(13) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(14) b x,y,0
(m_z|0,1/2,0)

(15) a x,0,z
(m_y|1/2,0,0)

(16) c 0,y,z
(m_x|0,0,1/2)

(17) $\bar{3}^+$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}$|1/2,1/2,1/2)

(18) $\bar{3}^+$ $\bar{x}$-1/2,x,$\bar{x}$;
-1/4,-1/4,1/4
($\bar{3}_{x\bar{y}\bar{z}}^{-1}$|0,0,1/2)

(19) $\bar{3}^+$ x-1/2,$\bar{x}$+1/2,$\bar{x}$;
-1/4,1/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|0,1/2,0)

(20) $\bar{3}^+$ $\bar{x}$,$\bar{x}$-1/2,x;
1/4,-1/4,-1/4
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,0,0)

(21) $\bar{3}^-$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}^{-1}$|1/2,1/2,1/2)

(22) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
1/4,-1/4,1/4
($\bar{3}_{\bar{x}yz}$|1/2,0,0)

(23) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2, x;
-1/4,1/4,1/4
($\bar{3}_{xy\bar{z}}$|0,0,1/2)

(24) $\bar{3}^-$ $\bar{x}$+1/2, x,$\bar{x}$;
1/4,1/4,-1/4
($\bar{3}_{x\bar{y}z}$|0,1/2,0)

207 P432

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$, x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$, x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

208 $P4_232$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}$|0,0,0)

(11) 3^- $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}$|0,0,0)

(12) 3^- $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}$|0,0,0)

(13) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(14) 2 x,$\overline{x}$+1/2,1/4
($2_{\overline{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(16) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/2,0
(4_x^{-1}|1/2,1/2,1/2)

(18) 2 (0,1/2,1/2) 1/4,y,y
(2_{yz}|1/2,1/2,1/2)

(19) 2 1/4,y+1/2,$\overline{y}$
($2_{\overline{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/2,0,0) x,0,1/2
(4_x|1/2,1/2,1/2)

(21) 4^+ (0,1/2,0) 1/2,y,0
(4_y|1/2,1/2,1/2)

(22) 2 (1/2,0,1/2) x,1/4,x
(2_{xz}|1/2,1/2,1/2)

(23) 4^- (0,1/2,0) 0,y,1/2
(4_y^{-1}|1/2,1/2,1/2)

(24) 2 $\overline{x}$+1/2,1/4,x
($2_{\overline{x}z}$|1/2,1/2,1/2)

209 F432

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}$|0,0,0)

(11) 3^- $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}$|0,0,0)

(12) 3^- $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\overline{x}$,0
($2_{\overline{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\overline{y}$
($2_{\overline{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\overline{x}$,0,x
($2_{\overline{x}z}$|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\overline{x}$,x+1/2,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\overline{x}$-1/6,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ $\overline{x}$,$\overline{x}$+1/2,x
($3_{xy\overline{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\overline{x}$+1/6,$\overline{x}$
($3_{\overline{x}yz}$|0,1/2,1/2)

(11) 3^- $\overline{x}$+1/2,$\overline{x}$+1/2,x
($3_{xy\overline{z}}$|0,1/2,1/2)

(12) 3^- $\overline{x}$-1/2,x+1/2,$\overline{x}$
($3_{x\overline{y}z}$|0,1/2,1/2)

(13) 2 (1/4,1/4,0) x,x+1/4,1/4 ($2_{xy}|0,1/2,1/2$)

(14) 2 (-1/4,1/4,0) x,$\bar{x}$+1/4,1/4 ($2_{\bar{x}y}|0,1/2,1/2$)

(15) 4^- (0,0,1/2) 1/4,1/4,z ($4_z^{-1}|0,1/2,1/2$)

(16) 4^+ (0,0,1/2) -1/4,1/4,z ($4_z|0,1/2,1/2$)

(17) 4^- x,1/2,0 ($4_x^{-1}|0,1/2,1/2$)

(18) 2 (0,1/2,1/2) 0,y,y ($2_{yz}|0,1/2,1/2$)

(19) 2 0,y+1/2,$\bar{y}$ ($2_{\bar{y}z}|0,1/2,1/2$)

(20) 4^+ x,0,1/2 ($4_x|0,1/2,1/2$)

(21) 4^+ (0,1/2,0) 1/4,y,1/4 ($4_y|0,1/2,1/2$)

(22) 2 (1/4,0,1/4) x-1/4,1/4,x ($2_{xz}|0,1/2,1/2$)

(23) 4^- (0,1/2,0) -1/4,y,1/4 ($4_y^{-1}|0,1/2,1/2$)

(24) 2 (-1/4,0,1/4)$\bar{x}$+1/4,1/4,x ($2_{\bar{x}z}|0,1/2,1/2$)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2) (1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z ($2_z|1/2,0,1/2$)

(3) 2 1/4,y,1/4 ($2_y|1/2,0,1/2$)

(4) 2 (1/2,0,0) x,0,1/4 ($2_x|1/2,0,1/2$)

(5) 3^+ (1/3,1/3,1/3) x+1/6,x-1/6,x ($3_{xyz}|1/2,0,1/2$)

(6) 3^+ (1/3,-1/3,1/3) $\bar{x}$+1/6,x+1/6,$\bar{x}$ ($3_{x\bar{y}z}^{-1}|1/2,0,1/2$)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$ ($3_{\bar{x}yz}^{-1}|1/2,0,1/2$)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x ($3_{xy\bar{z}}^{-1}|1/2,0,1/2$)

(9) 3^- (1/3,1/3,1/3) x-1/6,x-1/3,x ($3_{xyz}^{-1}|1/2,0,1/2$)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$ ($3_{\bar{x}yz}|1/2,0,1/2$)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$, x ($3_{xy\bar{z}}|1/2,0,1/2$)

(12) 3^- (1/3,-1/3,1/3) $\bar{x}$-1/6, x+1/3,$\bar{x}$ ($3_{x\bar{y}z}|1/2,0,1/2$)

(13) 2 (1/4,1/4,0) x,x-1/4,1/4 ($2_{xy}|1/2,0,1/2$)

(14) 2 (1/4,-1/4,0) x,$\bar{x}$+1/4,1/4 ($2_{\bar{x}y}|1/2,0,1/2$)

(15) 4^- (0,0,1/2) 1/4,-1/4,z ($4_z^{-1}|1/2,0,1/2$)

(16) 4^+ (0,0,1/2) 1/4,1/4,z ($4_z|1/2,0,1/2$)

(17) 4^- (1/2,0,0) x,1/4,1/4 ($4_x^{-1}|1/2,0,1/2$)

(18) 2 (0,1/4,1/4) 1/4,y-1/4,y ($2_{yz}|1/2,0,1/2$)

(19) 2 (0,-1/4,1/4) 1/4,y+1/4,$\bar{y}$ ($2_{\bar{y}z}|1/2,0,1/2$)

(20) 4^+ (1/2,0,0) x,-1/4,1/4 ($4_x|1/2,0,1/2$)

(21) 4^+ 1/2,y,0 ($4_y|1/2,0,1/2$)

(22) 2 (1/2,0,1/2) x,0,x ($2_{xz}|1/2,0,1/2$)

(23) 4^- 0,y,1/2 ($4_y^{-1}|1/2,0,1/2$)

(24) 2 $\bar{x}$+1/2,0,x ($2_{\bar{x}z}|1/2,0,1/2$)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0) (1|1/2,1/2,0)

(2) 2 1/4,1/4,z ($2_z|1/2,1/2,0$)

(3) 2 (0,1/2,0) 1/4,y,0 ($2_y|1/2,1/2,0$)

(4) 2 (1/2,0,0) x,1/4,0 ($2_x|1/2,1/2,0$)

(5) 3^+ (1/3,1/3,1/3) x+1/6,x+1/3,x ($3_{xyz}|1/2,1/2,0$)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$ ($3_{x\bar{y}z}^{-1}|1/2,1/2,0$)

(7) 3^+ x+1/2,$\bar{x}$,$\bar{x}$ ($3_{\bar{x}yz}^{-1}|1/2,1/2,0$)

(8) 3^+ (1/3,1/3,-1/3) $\bar{x}$+1/6,$\bar{x}$+1/3,x ($3_{xy\bar{z}}^{-1}|1/2,1/2,0$)

(9) 3^- (1/3,1/3,1/3) x+1/3,x+1/6,x ($3_{xyz}^{-1}|1/2,1/2,0$)

(10) 3^- x,$\bar{x}$+1/2,$\bar{x}$ ($3_{\bar{x}yz}|1/2,1/2,0$)

(11) 3^- (1/3,1/3,-1/3) $\bar{x}$+1/3,$\bar{x}$+1/6, x ($3_{xy\bar{z}}|1/2,1/2,0$)

(12) 3^- $\bar{x}$, x+1/2,$\bar{x}$ ($3_{x\bar{y}z}|1/2,1/2,0$)

(13) 2 (1/2,1/2,0) x,x,0 ($2_{xy}|1/2,1/2,0$)

(14) 2 x,$\bar{x}$+1/2,0 ($2_{\bar{x}y}|1/2,1/2,0$)

(15) 4^- 1/2,0,z ($4_z^{-1}|1/2,1/2,0$)

(16) 4^+ 0,1/2,z ($4_z|1/2,1/2,0$)

(17) 4^- (1/2,0,0) x,1/4,-1/4 ($4_x^{-1}|1/2,1/2,0$)

(18) 2 (0,1/4,1/4) 1/4,y+1/4,y ($2_{yz}|1/2,1/2,0$)

(19) 2 (0,1/4,-1/4) 1/4,y+1/4,$\bar{y}$ ($2_{\bar{y}z}|1/2,1/2,0$)

(20) 4^+ (1/2,0,0) x,1/4,1/4 ($4_x|1/2,1/2,0$)

(21) 4^+ (0,1/2,0) 1/4,y,-1/4 ($4_y|1/2,1/2,0$)

(22) 2 (1/4,0,1/4) x+1/4,1/4,x ($2_{xz}|1/2,1/2,0$)

(23) 4^- (0,1/2,0) 1/4,y,1/4 ($4_y^{-1}|1/2,1/2,0$)

(24) 2 (1/4,0,-1/4)$\bar{x}$+1/4,1/4,x ($2_{\bar{x}z}|1/2,1/2,0$)

210 $F4_132$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+1/6,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ (1/3,1/3,-1/3)
$\bar{x}$+1/6,$\bar{x}$+1/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$+1/2,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,0)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$,x
($3_{xy\bar{z}}$|1/2,0,1/2)

(12) 3^- $\bar{x}$-1/2,x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

(13) 2 (1/2,1/2,0) x,x-1/4,3/8
(2_{xy}|3/4,1/4,3/4)

(14) 2 x,$\bar{x}$+1/4,1/8
($2_{\bar{x}y}$|1/4,1/4,1/4)

(15) 4^- (0,0,3/4) 1/2,1/4,z
(4_z^{-1}|1/4,3/4,3/4)

(16) 4^+ (0,0,1/4) 0,3/4,z
(4_z|3/4,3/4,1/4)

(17) 4^- (3/4,0,0) x,1/2,1/4
(4_x^{-1}|3/4,1/4,3/4)

(18) 2 (0,1/2,1/2) 3/8,y+1/4,y
(2_{yz}|3/4,3/4,1/4)

(19) 2 1/8,y+1/4,$\bar{y}$
($2_{\bar{y}z}$|1/4,1/4,1/4)

(20) 4^+ (1/4,0,0) x,0,3/4
(4_x|1/4,3/4,3/4)

(21) 4^+ (0,1/4,0) 3/4,y,0
(4_y|3/4,1/4,3/4)

(22) 2 (1/2,0,1/2) x-1/4,3/8,x
(2_{xz}|1/4,3/4,3/4)

(23) 4^- (0,3/4,0) 1/4,y,1/2
(4_y^{-1}|3/4,3/4,1/4)

(24) 2 $\bar{x}$+1/4,1/8,x
($2_{\bar{x}z}$|1/4,1/4,1/4)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6,x
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 (3/4,3/4,0) x,x,1/8
(2_{xy}|3/4,3/4,1/4)

(14) 2 (-1/4,1/4,0) x,$\bar{x}$+1/2,3/8
($2_{\bar{x}y}$|1/4,3/4,3/4)

(15) 4^- (0,0,1/4) 1/4,0,z
(4_z^{-1}|1/4,1/4,1/4)

(16) 4^+ (0,0,3/4) 1/4,1/2,z
(4_z|3/4,1/4,3/4)

(17) 4^- (3/4,0,0) x,1/2,-1/4
(4_x^{-1}|3/4,3/4,1/4)

(18) 2 (0,1/2,1/2) 3/8,y-1/4,y
(2_{yz}|3/4,1/4,3/4)

(19) 2 1/8,y+3/4,$\bar{y}$
($2_{\bar{y}z}$|1/4,3/4,3/4)

(20) 4^+ (1/4,0,0) x,0,1/4
(4_x|1/4,1/4,1/4)

(21) 4^+ (0,3/4,0) 1/2,y,-1/4
(4_y|3/4,3/4,1/4)

(22) 2 (1/4,0,1/4) x,1/8,x
(2_{xz}|1/4,1/4,1/4)

(23) 4^- (0,1/4,0) 0,y,3/4
(4_y^{-1}|3/4,1/4,3/4)

(24) 2 (-1/4,0,1/4) $\bar{x}$+1/2,3/8,x
($2_{\bar{x}z}$|1/4,3/4,3/4)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,0)

(13) 2 (1/4,1/4,0) x,x,1/8
(2_{xy}|1/4,1/4,1/4)

(14) 2 (1/4,-1/4,0) x,$\overline{x}$+1/2,3/8
($2_{\overline{x}y}$|3/4,1/4,3/4)

(15) 4^- (0,0,1/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,1/4)

(16) 4^+ (0,0,3/4) -1/4,1/2,z
(4_z|1/4,3/4,3/4)

(17) 4^- (1/4,0,0) x,1/4,0
(4_x^{-1}|1/4,1/4,1/4)

(18) 2 (0,3/4,3/4) 1/8,y,y
(2_{yz}|1/4,3/4,3/4)

(19) 2 (0,-1/4,1/4) 3/8,y+1/2,$\overline{y}$
($2_{\overline{y}z}$|3/4,1/4,3/4)

(20) 4^+ (3/4,0,0) x,1/4,1/2
(4_x|3/4,3/4,1/4)

(21) 4^+ (0,1/4,0) 1/4,y,0
(4_y|1/4,1/4,1/4)

(22) 2 (1/2,0,1/2) x+1/4,3/8,x
(2_{xz}|3/4,3/4,1/4)

(23) 4^- (0,3/4,0) -1/4,y,1/2
(4_y^{-1}|1/4,3/4,3/4)

(24) 2 $\overline{x}$+3/4,1/8,x
($2_{\overline{x}z}$|3/4,1/4,3/4)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$,x+1/2,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ x+1/2,$\overline{x}$-1/2,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}^{-1}$|0,0,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}$|0,0,0)

(11) 3^- $\overline{x}$+1/2,$\overline{x}$+1/2,x
($3_{xy\overline{z}}$|0,1/2,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6,x+1/3,$\overline{x}$
($3_{x\overline{y}z}$|1/2,0,1/2)

(13) 2 (1/2,1/2,0) x,x+1/4,3/8
(2_{xy}|1/4,3/4,3/4)

(14) 2 x,$\overline{x}$+3/4,1/8
($2_{\overline{x}y}$|3/4,3/4,1/4)

(15) 4^- (0,0,3/4) 1/2,-1/4,z
(4_z^{-1}|3/4,1/4,3/4)

(16) 4^+ (0,0,1/4) 0,1/4,z
(4_z|1/4,1/4,1/4)

(17) 4^- (1/4,0,0) x,3/4,0
(4_x^{-1}|1/4,3/4,3/4)

(18) 2 (0,1/4,1/4) 1/8,y,y
(2_{yz}|1/4,1/4,1/4)

(19) 2 (0,1/4,-1/4) 3/8,y+1/2,$\overline{y}$
($2_{\overline{y}z}$|3/4,3/4,1/4)

(20) 4^+ (3/4,0,0) x,-1/4,1/2
(4_x|3/4,1/4,3/4)

(21) 4^+ (0,3/4,0) 1/2,y,1/4
(4_y|1/4,3/4,3/4)

(22) 2 (3/4,0,3/4) x,1/8,x
(2_{xz}|3/4,1/4,3/4)

(23) 4^- (0,1/4,0) 0,y,1/4
$\overline{x}$+1/2,3/8,x
(4_y^{-1}|1/4,1/4,1/4)

(24) 2 (1/4,0,-1/4)
($2_{\overline{x}z}$|3/4,3/4,1/4)

211 I432

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}$|0,0,0)

(11) 3^- $\overline{x}$,$\overline{x}$,x
($3_{xy\overline{z}}$|0,0,0)

(12) 3^- $\overline{x}$,x,$\overline{x}$
($3_{x\overline{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\overline{x}$,0
($2_{\overline{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\overline{y}$
($2_{\overline{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\overline{x}$,0,x
($2_{\overline{x}z}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x
(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$+1/3,x+1/3,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|1/2,1/2,1/2)

(7) 3^+ (-1/6,1/6,1/6)
x+2/3,$\bar{x}$-1/3,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+2/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(9) 3^- (1/2,1/2,1/2) x,x,x
(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (-1/6,1/6,1/6)
x+1/3,$\bar{x}$+1/3,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,1/2)

(11) 3^- (1/6,1/6,-1/6)
$\bar{x}$+2/3,$\bar{x}$+1/3, x
($3_{xy\bar{z}}$|1/2,1/2,1/2)

(12) 3^- (1/6,-1/6,1/6)
$\bar{x}$-1/3, x+2/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,1/2)

(13) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(16) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/2,0
(4_x^{-1}|1/2,1/2,1/2)

(18) 2 (0,1/2,1/2) 1/4,y,y
(2_{yz}|1/2,1/2,1/2)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/2,0,0) x,0,1/2
(4_x|1/2,1/2,1/2)

(21) 4^+ (0,1/2,0) 1/2,y,0
(4_y|1/2,1/2,1/2)

(22) 2 (1/2,0,1/2) x,1/4,x
(2_{xz}|1/2,1/2,1/2)

(23) 4^- (0,1/2,0) 0,y,1/2
(4_y^{-1}|1/2,1/2,1/2)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

212 $P4_332$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) 2 (1/2,1/2,0) x,x+1/4,3/8
(2_{xy}|1/4,3/4,3/4)

(14) 2 x,$\bar{x}$+1/4,1/8
($2_{\bar{x}y}$|1/4,1/4,1/4)

(15) 4^- (0,0,1/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,1/4)

(16) 4^+ (0,0,3/4)
1/4,1/2,z
(4_z|3/4,1/4,3/4)

(17) 4^- (1/4,0,0) x,3/4,0
(4_x^{-1}|1/4,3/4,3/4)

(18) 2 (0,1/2,1/2) 3/8,y-1/4,y
(2_{yz}|3/4,1/4,3/4)

(19) 2 1/8,y+1/4,$\bar{y}$
($2_{\bar{y}z}$|1/4,1/4,1/4)

(20) 4^+ (3/4,0,0)
x,1/4,1/2
(4_x|3/4,3/4,1/4)

(21) 4^+ (0,3/4,0) 1/2,y,1/4
(4_y|1/4,3/4,3/4)

(22) 2 (1/2,0,1/2) x+1/4,3/8,x
(2_{xz}|3/4,3/4,1/4)

(23) 4^- (0,1/4,0) 0,y,3/4
(4_y^{-1}|3/4,1/4,3/4)

(24) 2 $\bar{x}$+1/4,1/8,x
($2_{\bar{x}z}$|1/4,1/4,1/4)

213 $P4_132$

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) 2 (1/2,1/2,0) x,x-1/4,1/8
$(2_{xy}|3/4,1/4,1/4)$

(14) 2 x,$\bar{x}$+3/4,3/8
$(2_{\bar{x}y}|3/4,3/4,3/4)$

(15) 4^- (0,0,3/4) 1/4,0,z
$(4_z^{-1}|1/4,1/4,3/4)$

(16) 4^+ (0,0,1/4) -1/4,1/2,z
$(4_z|1/4,3/4,1/4)$

(17) 4^- (3/4,0,0) x,1/4,0
$(4_x^{-1}|3/4,1/4,1/4)$

(18) 2 (0,1/2,1/2) 1/8,y+1/4,y
$(2_{yz}|1/4,3/4,1/4)$

(19) 2 3/8,y+3/4,$\bar{y}$
$(2_{\bar{y}z}|3/4,3/4,3/4)$

(20) 4^+ (1/4,0,0) x,-1/4,1/2
$(4_x|1/4,1/4,3/4)$

(21) 4^+ (0,1/4,0) 1/2,y,-1/4
$(4_y|3/4,1/4,1/4)$

(22) 2 (1/2,0,1/2) x-1/4,1/8,x
$(2_{xz}|1/4,1/4,3/4)$

(23) 4^- (0,3/4,0) 0,y,1/4
$(4_y^{-1}|1/4,3/4,1/4)$

(24) 2 $\bar{x}$+3/4,3/8,x
$(2_{\bar{x}z}|3/4,3/4,3/4)$

214 $I4_132$

For (0,0,0) + set

(1) 1
$(1|0,0,0)$

(2) 2 (0,0,1/2) 1/4,0,z
$(2_z|1/2,0,1/2)$

(3) 2 (0,1/2,0) 0,y,1/4
$(2_y|0,1/2,1/2)$

(4) 2 (1/2,0,0) x,1/4,0
$(2_x|1/2,1/2,0)$

(5) 3^+ x,x,x
$(3_{xyz}|0,0,0)$

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
$(3_{\bar{x}\bar{y}z}^{-1}|1/2,1/2,0)$

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
$(3_{\bar{x}yz}^{-1}|1/2,0,1/2)$

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
$(3_{xy\bar{z}}^{-1}|0,1/2,1/2)$

(9) 3^- x,x,x
$(3_{xyz}^{-1}|0,0,0)$

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
$(3_{\bar{x}yz}|0,1/2,1/2)$

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
$(3_{xy\bar{z}}|1/2,1/2,0)$

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
$(3_{x\bar{y}z}|1/2,0,1/2)$

(13) 2 (1/2,1/2,0) x,x-1/4,1/8
$(2_{xy}|3/4,1/4,1/4)$

(14) 2 x,$\bar{x}$+3/4,3/8
$(2_{\bar{x}y}|3/4,3/4,3/4)$

(15) 4^- (0,0,3/4) 1/4,0,z
$(4_z^{-1}|1/4,1/4,3/4)$

(16) 4^+ (0,0,1/4) -1/4,1/2,z
$(4_z|1/4,3/4,1/4)$

(17) 4^- (3/4,0,0) x,1/4,0
$(4_x^{-1}|3/4,1/4,1/4)$

(18) 2 (0,1/2,1/2) 1/8,y+1/4,y
$(2_{yz}|1/4,3/4,1/4)$

(19) 2 3/8,y+3/4,$\bar{y}$
$(2_{\bar{y}z}|3/4,3/4,3/4)$

(20) 4^+ (1/4,0,0) x,-1/4,1/2
$(4_x|1/4,1/4,3/4)$

(21) 4^+ (0,1/4,0) 1/2,y,-1/4
$(4_y|3/4,1/4,1/4)$

(22) 2 (1/2,0,1/2) x-1/4,1/8,x
$(2_{xz}|1/4,1/4,3/4)$

(23) 4^- (0,3/4,0) 0,y,1/4
$(4_y^{-1}|1/4,3/4,1/4)$

(24) 2 $\bar{x}$+3/4,3/8,x
$(2_{\bar{x}z}|3/4,3/4,3/4)$

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
$(1|1/2,1/2,1/2)$

(2) 2 0,1/4,z
$(2_z|0,1/2,0)$

(3) 2 1/4,y,0
$(2_y|1/2,0,0)$

(4) 2 x,0,1/4
$(2_x|0,0,1/2)$

(5) 3^+ (1/2,1/2,1/2) x,x,x
$(3_{xyz}|1/2,1/2,1/2)$

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$-1/6,x+1/3,$\bar{x}$
$(3_{\bar{x}\bar{y}z}^{-1}|0,0,1/2)$

(7) 3^+ (-1/6,1/6,1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
$(3_{\bar{x}yz}^{-1}|0,1/2,0)$

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6,x
$(3_{xy\bar{z}}^{-1}|1/2,0,0)$

(9) 3^- (1/2,1/2,1/2) x,x,x
$(3_{xyz}^{-1}|1/2,1/2,1/2)$

(10) 3^- (1/6,-1/6,-1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
$(3_{\bar{x}yz}|1/2,0,0)$

(11) 3^- (-1/6,-1/6,1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
$(3_{xy\bar{z}}|0,0,1/2)$

(12) 3^- (-1/6,1/6,-1/6)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
$(3_{x\bar{y}z}|0,1/2,0)$

(13) 2 (1/2,1/2,0) x,x+1/4,3/8
$(2_{xy}|1/4,3/4,3/4)$

(14) 2 x,$\bar{x}$+1/4,1/8
$(2_{\bar{x}y}|1/4,1/4,1/4)$

(15) 4^- (0,0,1/4) 3/4,0,z
$(4_z^{-1}|3/4,3/4,1/4)$

(16) 4^+ (0,0,3/4) 1/4,1/2,z
$(4_z|3/4,1/4,3/4)$

(17) 4^- (1/4,0,0) x,3/4,0
$(4_x^{-1}|1/4,3/4,3/4)$

(18) 2 (0,1/2,1/2) 3/8,y-1/4,y
$(2_{yz}|3/4,1/4,3/4)$

(19) 2 1/8,y+1/4,$\bar{y}$
$(2_{\bar{y}z}|1/4,1/4,1/4)$

(20) 4^+ (3/4,0,0) x,1/4,1/2
$(4_x|3/4,3/4,1/4)$

(21) 4^+ (0,3/4,0) 1/2,y,1/4
$(4_y|1/4,3/4,3/4)$

(22) 2 (1/2,0,1/2) x+1/4,3/8,x
$(2_{xz}|3/4,3/4,1/4)$

(23) 4^- (0,1/4,0) 0,y,3/4
$(4_y^{-1}|3/4,1/4,3/4)$

(24) 2 $\bar{x}$+1/4,1/8,x
$(2_{\bar{x}z}|1/4,1/4,1/4)$

215 P$\bar{4}$3m

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 2 0,y,0
($2_y|0,0,0$)

(4) 2 x,0,0
($2_x|0,0,0$)

(5) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,0,0$)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,0,0$)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}|0,0,0$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}|0,0,0$)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}|0,0,0$)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}|0,0,0$)

(13) m x,x,z
($m_{\bar{x}y}|0,0,0$)

(14) m x,$\bar{x}$,z
($m_{xy}|0,0,0$)

(15) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(16) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(17) m x,y,y
($m_{\bar{y}z}|0,0,0$)

(18) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x|0,0,0$)

(19) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}|0,0,0$)

(20) m x,y,$\bar{y}$
($m_{yz}|0,0,0$)

(21) m x,y,x
($m_{\bar{x}z}|0,0,0$)

(22) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}|0,0,0$)

(23) m $\bar{x}$,y,x
($m_{xz}|0,0,0$)

(24) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y|0,0,0$)

216 F$\bar{4}$3m

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 2 0,y,0
($2_y|0,0,0$)

(4) 2 x,0,0
($2_x|0,0,0$)

(5) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,0,0$)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,0,0$)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}|0,0,0$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}|0,0,0$)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}|0,0,0$)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}|0,0,0$)

(13) m x,x,z
($m_{\bar{x}y}|0,0,0$)

(14) m x,$\bar{x}$,z
($m_{xy}|0,0,0$)

(15) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z|0,0,0$)

(16) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}|0,0,0$)

(17) m x,y,y
($m_{\bar{y}z}|0,0,0$)

(18) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x|0,0,0$)

(19) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}|0,0,0$)

(20) m x,y,$\bar{y}$
($m_{yz}|0,0,0$)

(21) m x,y,x
($m_{\bar{x}z}|0,0,0$)

(22) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}|0,0,0$)

(23) m $\bar{x}$,y,x
($m_{xz}|0,0,0$)

(24) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y|0,0,0$)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
($1|0,1/2,1/2$)

(2) 2 (0,0,1/2) 0,1/4,z
($2_z|0,1/2,1/2$)

(3) 2 (0,1/2,0) 0,y,1/4
($2_y|0,1/2,1/2$)

(4) 2 x,1/4,1/4
($2_x|0,1/2,1/2$)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
($3_{xyz}|0,1/2,1/2$)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}|0,1/2,1/2$)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,1/2,1/2$)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}|0,1/2,1/2$)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
($3_{xyz}^{-1}|0,1/2,1/2$)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}|0,1/2,1/2$)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}|0,1/2,1/2$)

(12) 3^- $\bar{x}$-1/2,x+1/2,$\bar{x}$
($3_{x\bar{y}z}|0,1/2,1/2$)

(13) g (1/4,1/4,1/2) x-1/4,x,z
($m_{\bar{x}y}|0,1/2,1/2$)

(14) g (-1/4,1/4,1/2) x+1/4,$\bar{x}$,z
($m_{xy}|0,1/2,1/2$)

(15) $\bar{4}^+$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z|0,1/2,1/2$)

(16) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4
($\bar{4}_z^{-1}|0,1/2,1/2$)

(17) g (0,1/2,1/2) x,y,y
($m_{\bar{y}z}|0,1/2,1/2$)

(18) $\bar{4}^+$ x,1/2,0; 0,1/2,0
($\bar{4}_x|0,1/2,1/2$)

(19) $\bar{4}^-$ x,0,1/2; 0,0,1/2
($\bar{4}_x^{-1}|0,1/2,1/2$)

(20) m x,y+1/2,$\bar{y}$
($m_{yz}|0,1/2,1/2$)

(21) g (1/4,1/2,1/4) x-1/4,y,x
($m_{\bar{x}z}|0,1/2,1/2$)

(22) $\bar{4}^-$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y^{-1}|0,1/2,1/2$)

(23) g (-1/4,1/2,1/4) $\bar{x}$+1/4,y,x
($m_{xz}|0,1/2,1/2$)

(24) $\bar{4}^+$ -1/4,y,1/4; -1/4,1/4,1/4
($\bar{4}_y|0,1/2,1/2$)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
($2_z|1/2,0,1/2$)

(3) 2 1/4,y,1/4
($2_y|1/2,0,1/2$)

(4) 2 (1/2,0,0) x,0,1/2
($2_x|1/2,0,1/2$)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
($3_{xyz}|1/2,0,1/2$)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+1/6,$\bar{x}$
($3_{x\bar{y}z}^{-1}|1/2,0,1/2$)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}|1/2,0,1/2$)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}|1/2,0,1/2$)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
($3_{xyz}^{-1}|1/2,0,1/2$)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}|1/2,0,1/2$)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$, x
($3_{xy\bar{z}}|1/2,0,1/2$)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}|1/2,0,1/2$)

(13) g (1/4,1/4,1/2) x+1/4,x,z
($m_{\bar{x}y}|1/2,0,1/2$)

(14) g (1/4,-1/4,1/2) x+1/4,$\bar{x}$,z
($m_{xy}|1/2,0,1/2$)

(15) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
($\bar{4}_z|1/2,0,1/2$)

(16) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z^{-1}|1/2,0,1/2$)

(17) g (1/2,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}|1/2,0,1/2$)

(18) $\bar{4}^+$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x|1/2,0,1/2$)

(19) $\bar{4}^-$ x,-1/4,1/4; 1/4,-1/4,1/4
($\bar{4}_x^{-1}|1/2,0,1/2$)

(20) g (1/2,-1/4,1/4) x,y+1/4,$\bar{y}$
($m_{yz}|1/2,0,1/2$)

(21) g (1/2,0,1/2) x,y,x
($m_{\bar{x}z}|1/2,0,1/2$)

(22) $\bar{4}^-$ 1/2,y,0; 1/2,0,0
($\bar{4}_y^{-1}|1/2,0,1/2$)

(23) m $\bar{x}$+1/2,y,x
($m_{xz}|1/2,0,1/2$)

(24) $\bar{4}^+$ 0,y,1/2; 0,0,1/2
($\bar{4}_y|1/2,0,1/2$)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
($2_z|1/2,1/2,0$)

(3) 2 (0,1/2,0) 1/4,y,0
($2_y|1/2,1/2,0$)

(4) 2 (1/2,0,0) x,1/4,0
($2_x|1/2,1/2,0$)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
($3_{xyz}|1/2,1/2,0$)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}|1/2,1/2,0$)

(7) 3^+ x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}|1/2,1/2,0$)

(8) 3^+ (1/3,1/3,-1/3)
$\bar{x}$+1/6,$\bar{x}$+1/3,x
($3_{xy\bar{z}}^{-1}|1/2,1/2,0$)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
($3_{xyz}^{-1}|1/2,1/2,0$)

(10) 3^- x,$\bar{x}$+1/2,$\bar{x}$
($3_{\bar{x}yz}|1/2,1/2,0$)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}|1/2,1/2,0$)

(12) 3^- $\bar{x}$, x+1/2,$\bar{x}$
($3_{x\bar{y}z}|1/2,1/2,0$)

(13) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}|1/2,1/2,0$)

(14) m x+1/2,$\bar{x}$,z
($m_{xy}|1/2,1/2,0$)

(15) $\bar{4}^+$ 1/2,0,z; 1/2,0,0
($\bar{4}_z|1/2,1/2,0$)

(16) $\bar{4}^-$ 0,1/2,z; 0,1/2,0
($\bar{4}_z^{-1}|1/2,1/2,0$)

(17) g (1/2,1/4,1/4) x,y+1/4,y

(18) $\bar{4}^+$ x,1/4,-1/4; 1/4,1/4,-1/4
($\bar{4}_x|1/2,1/2,0$)

(19) $\bar{4}^-$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x^{-1}|1/2,1/2,0$)

(20) g (1/2,1/4,-1/4) x,y+1/4,$\bar{y}$
($m_{yz}|1/2,1/2,0$)

(21) g (1/4,1/2,1/4) x+1/4,y,x

(22) $\bar{4}^-$ 1/4,y,-1/4; 1/4,1/4,-1/4
($\bar{4}_y^{-1}|1/2,1/2,0$)

(23) g (1/4,1/2,-1/4) $\bar{x}$+1/4,y,x
($m_{xz}|1/2,1/2,0$)

(24) $\bar{4}^+$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y|1/2,1/2,0$)

217 $I\bar{4}3m$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(14) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(15) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(16) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(17) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(18) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x$|0,0,0)

(19) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}$|0,0,0)

(20) m x,y,$\bar{y}$
(m_{yz}|0,0,0)

(21) m x,y,x
($m_{\bar{x}z}$|0,0,0)

(22) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}$|0,0,0)

(23) m $\bar{x}$,y,x
(m_{xz}|0,0,0)

(24) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x
(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6) $\bar{x}$+1/3,x+1/3,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|1/2,1/2,1/2)

(7) 3^+ (-1/6,1/6,1/6) x+2/3,$\bar{x}$-1/3,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(8) 3^+ (1/6,1/6,-1/6) $\bar{x}$+1/3,$\bar{x}$+2/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(9) 3^- (1/2,1/2,1/2) x,x,x
(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (-1/6,1/6,1/6) x+1/3,$\bar{x}$+1/3,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,1/2)

(11) 3^- (1/6,1/6,-1/6) $\bar{x}$+2/3,$\bar{x}$+1/3, x
($3_{xy\bar{z}}$|1/2,1/2,1/2)

(12) 3^- (1/6,-1/6,1/6) $\bar{x}$-1/3, x+2/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,1/2)

(13) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(14) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(15) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(16) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(17) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(18) $\bar{4}^+$ x,1/2,0;1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(19) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(20) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(21) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

(22) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(23) b $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(24) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

218 $P\bar{4}3n$

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(14) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(15) $\bar{4}^+$ 1/2,0,z;1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(16) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(17) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(18) $\bar{4}^+$ x,1/2,0; 1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(19) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(20) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(21) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

(22) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(23) b $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(24) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

219 F$\bar{4}$3c

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$, x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$, x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(14) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(15) $\bar{4}^+$ 1/2,0,z;1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(16) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(17) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(18) $\bar{4}^+$ x,1/2,0; 1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(19) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(20) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(21) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

(22) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(23) b $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(24) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$-1/2, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

(13) g (1/4,1/4,0) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,0)

(14) g (1/4,-1/4,0) x+1/4,$\bar{x}$,z
(m_{xy}|1/2,0,0)

(15) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(16) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,0
($\bar{4}_z^{-1}$|1/2,0,0)

(17) a x,y,y
($m_{\bar{y}z}$|1/2,0,0)

(18) $\bar{4}^+$ x,0,0; 1/4,0,0
($\bar{4}_x$|1/2,0,0)

(19) $\bar{4}^-$ x,0,0; 1/4,0,0
($\bar{4}_x^{-1}$|1/2,0,0)

(20) a x,y,$\bar{y}$
(m_{yz}|1/2,0,0)

(21) g (1/4,0,1/4) x+1/4,y,x
($m_{\bar{x}z}$|1/2,0,0)

(22) $\bar{4}^-$ 1/4,y,-1/4; 1/4,0,-1/4
($\bar{4}_y^{-1}$|1/2,0,0)

(23) g (1/4,0,-1/4) $\bar{x}$+1/4,y,x
(m_{xz}|1/2,0,0)

(24) $\bar{4}^+$ 1/4,y,1/4; 1/4,0,1/4
($\bar{4}_y$|1/2,0,0)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\overline{x}$+1/6,x+1/6,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ x+1/2,$\overline{x}$-1/2,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\overline{x}$+1/2,$\overline{x}$+1/2,x
($3_{xy\overline{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+1/2,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}$|1/2,0,1/2)

(11) 3^- $\overline{x}$+1/2,$\overline{x}$,x
($3_{xy\overline{z}}$|1/2,0,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+1/3,$\overline{x}$
($3_{x\overline{y}z}$|1/2,0,1/2)

(13) g (1/4,1/4,0) x-1/4,x,z
($m_{\overline{x}y}$|0,1/2,0)

(14) g (-1/4,1/4,0) x+1/4,$\overline{x}$,z
(m_{xy}|0,1/2,0)

(15) $\overline{4}^+$ 1/4,1/4,z; 1/4,1/4,0
($\overline{4}_z$|0,1/2,0)

(16) $\overline{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\overline{4}_z^{-1}$|0,1/2,0)

(17) g (0,1/4,1/4) x,y+1/4,y
($m_{\overline{y}z}$|0,1/2,0)

(18) $\overline{4}^+$ x,1/4,-1/4; 0,1/4,-1/4
($\overline{4}_x$|0,1/2,0)

(19) $\overline{4}^-$ x,1/4,1/4; 0,1/4,1/4
($\overline{4}_x^{-1}$|0,1/2,0)

(20) g (0,1/4,-1/4) x,y+1/4,$\overline{y}$
(m_{yz}|0,1/2,0)

(21) b x,y,x
($m_{\overline{x}z}$|0,1/2,0)

(22) $\overline{4}^-$ 0,y,0; 0,1/4,0
($\overline{4}_y^{-1}$|0,1/2,0)

(23) b $\overline{x}$,y,x
(m_{xz}|0,1/2,0)

(24) $\overline{4}^+$ 0,y,0; 0,1/4,0
($\overline{4}_y$|0,1/2,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ (1/3,1/3,-1/3)
$\overline{x}$+1/6,$\overline{x}$+1/3,x
($3_{xy\overline{z}}^{-1}$|1/2,1/2,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\overline{x}$+1/2,$\overline{x}$
($3_{\overline{x}yz}$|1/2,1/2,0)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\overline{z}}$|1/2,1/2,0)

(12) 3^- $\overline{x}$, x+1/2,$\overline{x}$
($3_{x\overline{y}z}$|1/2,1/2,0)

(13) c x,x,z
($m_{\overline{x}y}$|0,0,1/2)

(14) c x,$\overline{x}$,z
(m_{xy}|0,0,1/2)

(15) $\overline{4}^+$ 0,0,z; 0,0,1/4
($\overline{4}_z$|0,0,1/2)

(16) $\overline{4}^-$ 0,0,z; 0,0,1/4
($\overline{4}_z^{-1}$|0,0,1/2)

(17) g (0,1/4,1/4) x,y-1/4,y
($m_{\overline{y}z}$|0,0,1/2)

(18) $\overline{4}^+$ x,1/4,1/4; 0,1/4,-1/4
($\overline{4}_x$|0,0,1/2)

(19) $\overline{4}^-$ x,-1/4,1/4; 0,-1/4,1/4
($\overline{4}_x^{-1}$|0,0,1/2)

(20) g (0,-1/4,+1/4) x,y+1/4,$\overline{y}$
(m_{yz}|0,0,1/2)

(21) g (1/4,0,1/4) x-1/4,y,x
($m_{\overline{x}z}$|0,0,1/2)

(22) $\overline{4}^-$ 1/4,y,1/4; 1/4,0,1/4
($\overline{4}_y^{-1}$|0,0,1/2)

(23) g (-1/4,0,1/4) $\overline{x}$+1/4,y,x
(m_{xz}|0,0,1/2)

(24) $\overline{4}^+$ -1/4,y,1/4; -1/4,0,1/4
($\overline{4}_y$|0,0,1/2)

220 $I\overline{4}3d$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\overline{x}$-1/2,$\overline{x}$
($3_{\overline{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\overline{x}$,$\overline{x}$+1/2,x
($3_{xy\overline{z}}^{-1}$|0,1/2,1/2)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\overline{x}$+1/6,$\overline{x}$
($3_{\overline{x}yz}$|0,1/2,1/2)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\overline{z}}$|1/2,1/2,0)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+1/3,$\overline{x}$
($3_{x\overline{y}z}$|1/2,0,1/2)

(13) d (1/4,1/4,1/4) x,x,z
($m_{\bar{x}y}$|1/4,1/4,1/4)

(14) d (-1/4,1/4,3/4) x+1/2,$\bar{x}$,z
(m_{xy}|1/4,3/4,3/4)

(15) $\bar{4}^+$ 1/2,-1/4,z; 1/2,-1/4,3/8
($\bar{4}_z$|3/4,1/4,3/4)

(16) $\bar{4}^-$ 0,3/4,z; 0,3/4,1/8
($\bar{4}_z^{-1}$|3/4,3/4,1/4)

(17) d (1/4,1/4,1/4) x,y,y
($m_{\bar{y}z}$|1/4,1/4,1/4)

(18) $\bar{4}^+$ x,1/2,-1/4; 3/8,1/2,-1/4
($\bar{4}_x$|3/4,3/4,1/4)

(19) $\bar{4}^-$ x,0,3/4; 1/8,0,3/4
($\bar{4}_x^{-1}$|1/4,3/4,3/4)

(20) d (3/4,-1/4,1/4) x,y+1/2,$\bar{y}$
(m_{yz}|3/4,1/4,3/4)

(21) d (1/4,1/4,1/4) x,y,x
($m_{\bar{x}z}$|1/4,1/4,1/4)

(22) $\bar{4}^-$ 3/4,y,0; 3/4,1/8,0
($\bar{4}_y^{-1}$|3/4,1/4,3/4)

(23) d (1/4,3/4,-1/4) $\bar{x}$+1/2,y,x
(m_{xz}|3/4,3/4,1/4)

(24) $\bar{4}^+$ -1/4,y,1/2; -1/4,3/8,1/2
($\bar{4}_y$|1/4,3/4,3/4)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 0,1/4,z
(2_z|0,1/2,0)

(3) 2 1/4,y,0
(2_y|1/2,0,0)

(4) 2 x,0,1/4
(2_x|0,0,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x
(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$-1/6,x+1/3,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,1/2)

(7) 3^+ (-1/6,1/6,1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,0)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6,x
($3_{xy\bar{z}}^{-1}$|1/2,0,0)

(9) 3^- (1/2,1/2,1/2) x,x,x
(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (1/6,-1/6,-1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,0)

(11) 3^- (-1/6,-1/6,1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}$|0,0,1/2)

(12) 3^- (-1/6,1/6,-1/6)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,0)

(13) d (3/4,3/4,3/4) x,x,z
($m_{\bar{x}y}$|3/4,3/4,3/4)

(14) d (1/4,-1/4,1/4) x+1/2,$\bar{x}$,z
(m_{xy}|3/4,1/4,1/4)

(15) $\bar{4}^+$ 1/2,1/4,z; 1/2,1/4,1/8
($\bar{4}_z$|1/4,3/4,1/4)

(16) $\bar{4}^-$ 0,1/4,z; 0,1/4,3/8
($\bar{4}_z^{-1}$|1/4,1/4,3/4)

(17) d (3/4,3/4,3/4) x,y,y
($m_{\bar{y}z}$|3/4,3/4,3/4)

(18) $\bar{4}^+$ x,1/2,1/4; 1/8,1/2,1/4
($\bar{4}_x$|1/4,1/4,3/4)

(19) $\bar{4}^-$ x,0,1/4; 3/8,0,1/4
($\bar{4}_x^{-1}$|3/4,1/4,1/4)

(20) d (1/4,1/4,-1/4) x,y+1/2,$\bar{y}$
(m_{yz}|1/4,3/4,1/4)

(21) d (3/4,3/4,3/4) x,y,x
($m_{\bar{x}z}$|3/4,3/4,3/4)

(22) $\bar{4}^-$ 1/4,y,0; 1/4,0,3/8
($\bar{4}_y^{-1}$|1/4,3/4,1/4)

(23) d (-1/4,1/4,1/4) $\bar{x}$+1/2,y,x
(m_{xz}|1/4,1/4,3/4)

(24) $\bar{4}^+$ 1/4,y,1/2; 1/4,1/8,1/2
($\bar{4}_y$|3/4,1/4,1/4)

221 Pm$\bar{3}$m

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$, x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$, x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) m x,y,0
(m_z|0,0,0)

(27) m x,0,z
(m_y|0,0,0)

(28) m 0,y,z
(m_x|0,0,0)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(31) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(32) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(36) $\bar{3}^-$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

(37) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(40) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(41) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}$|0,0,0)

(42) m x,y,$\bar{y}$
(m_{yz}|0,0,0)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x$|0,0,0)

(45) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y$|0,0,0)

(46) m $\bar{x}$,y,x
(m_{xz}|0,0,0)

(47) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}$|0,0,0)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

222 Pn$\bar{3}$n ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(25) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,12)

(26) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,12)

(27) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,12)

(28) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,12)

(29) $\bar{3}^+$ x,x,x; 1/4,1/4,1/4
($\bar{3}_{xyz}$|1/2,1/2,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$; -1/4,1/4,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/2,1/2)

(31) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$; 1/4,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(32) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x; 3/4,-1/4,1/4
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(33) $\bar{3}^-$ x,x,x; 1/4,1/4,1/4
($\bar{3}_{xyz}^{-1}$|1/2,1/2,1/2)

(34) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$; 1/4,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|1/2,1/2,1/2)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1,x; -1/4,3/4,1/4
($\bar{3}_{xy\bar{z}}$|1/2,1/2,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1,x,$\bar{x}$; 3/4,1/4,-1/4
($\bar{3}_{x\bar{y}z}$|1/2,1/2,1/2)

(37) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(39) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(41) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(42) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(44) $\bar{4}^+$ x,1/2,0; 1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

(46) b $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

222 Pn$\bar{3}$n ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,0)

(13) 2 x,x,1/4
(2_{xy}|0,0,1/2)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- 1/4,1/4,z
(4_z^{-1}|0,1/2,0)

(16) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(17) 4^- x,1/4,1/4
(4_x^{-1}|0,0,1/2)

(18) 2 1/4,y,y
(2_{yz}|1/2,0,0)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ x,1/4,1/4
(4_x|0,1/2,0)

(21) 4^+ 1/4,y,1/4
(4_y|0,0,1/2)

(22) 2 x,1/4,x
(2_{xz}|0,1/2,0)

(23) 4^- 1/4,y,1/4
(4_y^{-1}|1/2,0,0)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(27) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(28) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1/2,$\bar{x}$; -1/2,0,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(31) $\bar{3}^+$ x-1/2,$\bar{x}$+1,$\bar{x}$; 0,1/2,-1/2
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$-1/2,x; 1/2,-1/2,0
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1,$\bar{x}$; 0,-1/2,1/2
($\bar{3}_{\bar{x}yz}$|1/2,0,1/2)

(35) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2, x; -1/2,1/2,0
($\bar{3}_{xy\bar{z}}$|0,1/2,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1, x-1/2,$\bar{x}$; 1/2,0,-1/2
($\bar{3}_{x\bar{y}z}$|1/2,1/2,0)

(37) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(39) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,1/2,0)

(40) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(41) $\bar{4}^-$ x,-1/4,1/4; 0,-1/4,1/4
($\bar{4}_x^{-1}$|0,0,1/2)

(42) a x,y,$\bar{y}$
(m_{yz}|1/2,0,0)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(44) $\bar{4}^+$ x,1/4,-1/4; 0,1/4,-1/4
($\bar{4}_x$|0,1/2,0)

(45) $\bar{4}^+$ -1/4,y,1/4; -1/4,0,1/4
($\bar{4}_y$|0,0,1/2)

(46) b $\bar{x}$,y,x
(m_{xz}|0,1/2,0)

(47) $\bar{4}^-$ 1/4,y,-1/4; 1/4,0,-1/4
($\bar{4}_y^{-1}$|1/2,0,0)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

223 Pm$\bar{3}$n

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$, x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$, x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(16) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/2,0
(4_x^{-1}|1/2,1/2,1/2)

(18) 2 (0,1/2,1/2) 1/4,y,y
(2_{yz}|1/2,1/2,1/2)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/2,0,0) x,0,1/2
(4_x|1/2,1/2,1/2)

(21) 4^+ (0,1/2,0) 1/2,y,0
(4_y|1/2,1/2,1/2)

(22) 2 (1/2,0,1/2) x,1/4,x
(2_{xz}|1/2,1/2,1/2)

(23) 4^- (0,1/2,0) 0,y,1/2
(4_y^{-1}|1/2,1/2,1/2)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) m x,y,0
(m_z|0,0,0)

(27) m x,0,z
(m_y|0,0,0)

(28) m 0,y,z
(m_x|0,0,0)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(31) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(32) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(36) $\bar{3}^-$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

(37) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(39) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(41) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(42) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(44) $\bar{4}^+$ x,1/2,0; 1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

(46) b $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

224 Pn$\bar{3}$m ORIGIN CHOICE 1

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(16) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/2,0
(4_x^{-1}|1/2,1/2,1/2)

(18) 2 (0,1/2,1/2) 1/4,y,y
(2_{yz}|1/2,1/2,1/2)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/2,0,0) x,0,1/2
(4_x|1/2,1/2,1/2)

(21) 4^+ (0,1/2,0) 1/2,y,0
(4_y|1/2,1/2,1/2)

(22) 2 (1/2,0,1/2) x,1/4,x
(2_{xz}|1/2,1/2,1/2)

(23) 4^- (0,1/2,0) 0,y,1/2
(4_y^{-1}|1/2,1/2,1/2)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(25) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(26) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(27) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(28) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(29) $\bar{3}^+$ x,x,x; 1/4,1/4,1/4
($\bar{3}_{xyz}$|1/2,1/2,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$; -1/4,1/4,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/2,1/2)

(31) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$; 1/4,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(32) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x; 3/4,-1/4,1/4
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(33) $\bar{3}^-$ x,x,x; 1/4,1/4,1/4
($\bar{3}_{xyz}^{-1}$|1/2,1/2,1/2)

(34) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$; 1/4,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|1/2,1/2,1/2)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1,x; -1/4,3/4,1/4
($\bar{3}_{xy\bar{z}}$|1/2,1/2,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1,x,$\bar{x}$; 3/4,1/4,-1/4
($\bar{3}_{x\bar{y}z}$|1/2,1/2,1/2)

(37) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(40) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(41) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}$|0,0,0)

(42) m x,y,$\bar{y}$
(m_{yz}|0,0,0)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x$|0,0,0)

(45) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y$|0,0,0)

(46) m $\bar{x}$,y,x
(m_{xz}|0,0,0)

(47) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}$|0,0,0)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

224 Pn$\bar{3}$m ORIGIN CHOICE 2

(1) 1
(1|0,0,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,0)

(13) 2 (1/2,1/2,0) x,x,0
(2_{xy}|1/2,1/2,0)

(14) 2 x,$\bar{x}$0,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- (0,0,1/2) 1/4,-1/4,z
(4_z^{-1}|1/2,0,1/2)

(16) 4^+ (0,0,1/2) -1/4,1/4,z
(4_z|0,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/4,-1/4
(4_x^{-1}|1/2,1/2,0)

(18) 2 (0,1/2,1/2) 0,y,y
(2_{yz}|0,1/2,1/2)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ (1/2,0,0) x,-1/4,1/4
(4_x|1/2,0,1/2)

(21) 4^+ (0,1/2,0) 1/4,y,-1/4
(4_y|1/2,1/2,0)

(22) 2 (1/2,0,1/2) x,0,x
(2_{xz}|1/2,0,1/2)

(23) 4^- (0,1/2,0) -1/4,y,1/4
(4_y^{-1}|0,1/2,1/2)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(27) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(28) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

(29) $\bar{3}^+$ x,x,x;
0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1/2,$\bar{x}$;
-1/2,0,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(31) $\bar{3}^+$ x-1/2,$\bar{x}$+1,$\bar{x}$;
0,1/2,-1/2
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$-1/2,x;
1/2,-1/2,0
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(33) $\bar{3}^-$ x,x,x;
0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1,$\bar{x}$;
0,-1/2,1/2
($\bar{3}_{\bar{x}yz}$|1/2,0,1/2)

(35) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2, x;
-1/2,1/2,0
($\bar{3}_{xy\bar{z}}$|0,1/2,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1, x-1/2,$\bar{x}$;
1/2,0,-1/2
($\bar{3}_{x\bar{y}z}$|1/2,1/2,0)

(37) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z^{-1}$|1/2,0,1/2)

(40) $\bar{4}^+$ 1/4,0 1/4,z; 1/4,1/4,1/4
($\bar{4}_z$|0,1/2,1/2)

(41) $\bar{4}^-$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x^{-1}$|1/2,1/2,0)

(42) m x,y+1/2,$\bar{y}$
(m_{yz}|0,1/2,1/2)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x$|1/2,0,1/2)

(45) $\bar{4}^+$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y$|1/2,1/2,0)

(46) m $\bar{x}$+1/2,y,x
(m_{xz}|1/2,0,1/2)

(47) $\bar{4}^-$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y^{-1}$|0,1/2,1/2)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

225 $Fm\bar{3}m$

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) m x,y,0
(m_z|0,0,0)

(27) m x,0,z
(m_y|0,0,0)

(28) m 0,y,z
(m_x|0,0,0)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(31) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(32) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(36) $\bar{3}^-$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

(37) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(40) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(41) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}$|0,0,0)

(42) m x,y,$\bar{y}$
(m_{yz}|0,0,0)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x$|0,0,0)

(45) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y$|0,0,0)

(46) m $\bar{x}$,y,x
(m_{xz}|0,0,0)

(47) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}$|0,0,0)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$-1/2, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

(13) 2 (1/4,1/4,0) x,x+1/4,1/4 ($2_{xy}|0,1/2,1/2$)

(14) 2 (-1/4,1/4,0) x,$\bar{x}$+1/4,1/4 ($2_{\bar{x}y}|0,1/2,1/2$)

(15) 4^- (0,0,1/2) 1/4,1/4,z ($4_z^{-1}|0,1/2,1/2$)

(16) 4^+ (0,0,1/2) -1/4,1/4,z ($4_z|0,1/2,1/2$)

(17) 4^- x,1/2,0 ($4_x^{-1}|0,1/2,1/2$)

(18) 2 (0,1/2,1/2) 0,y,y ($2_{yz}|0,1/2,1/2$)

(19) 2 0,y+1/2,$\bar{y}$ ($2_{\bar{y}z}|0,1/2,1/2$)

(20) 4^+ x,0,1/2 ($4_x|0,1/2,1/2$)

(21) 4^+ (0,1/2,0) 1/4,y,1/4 ($4_y|0,1/2,1/2$)

(22) 2 (1/4,0,1/4) x-1/4,1/4,x ($2_{xz}|0,1/2,1/2$)

(23) 4^- (0,1/2,0) -1/4,y,1/4 ($4_y^{-1}|0,1/2,1/2$)

(24) 2 (-1/4,0,1/4)$\bar{x}$+1/4,1/4,x ($2_{\bar{x}z}|0,1/2,1/2$)

(25) $\bar{1}$ 0,1/4,1/4 ($\bar{1}|0,1/2,1/2$)

(26) b x,y,1/4 ($m_z|0,1/2,1/2$)

(27) c x,1/4,z ($m_y|0,1/2,1/2$)

(28) n (0,1/2,1/2) 0,y,z ($m_x|0,1/2,1/2$)

(29) $\bar{3}^+$ x,x+1/2,x; 0,1/2,0 ($\bar{3}_{xyz}|0,1/2,1/2$)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1/2,$\bar{x}$; -1/2,0,1/2 ($\bar{3}_{x\bar{y}z}^{-1}|0,1/2,1/2$)

(31) $\bar{3}^+$ x,$\bar{x}$+1/2,$\bar{x}$; 0,1/2,0 ($\bar{3}_{\bar{x}yz}^{-1}|0,1/2,1/2$)

(32) $\bar{3}^+$ $\bar{x}$-1,$\bar{x}$+1/2,x; 1/2,0,1/2 ($\bar{3}_{xy\bar{z}}^{-1}|0,1/2,1/2$)

(33) $\bar{3}^-$ x-1/2,x-1/2,x; 0,0,1/2 ($\bar{3}_{xyz}^{-1}|0,1/2,1/2$)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$; 0,0,1/2 ($\bar{3}_{\bar{x}yz}|0,1/2,1/2$)

(35) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2, x; -1/2,1/2,0 ($\bar{3}_{xy\bar{z}}|0,1/2,1/2$)

(36) $\bar{3}^-$ $\bar{x}$+1/2, x+1/2,$\bar{x}$; 1/2,1/2,0 ($\bar{3}_{x\bar{y}z}|0,1/2,1/2$)

(37) g (-1/4,1/4,1/2) x+1/4,$\bar{x}$,z ($m_{xy}|0,1/2,1/2$)

(38) g (1/4,1/4,1/2) x-1/4,x,z ($m_{\bar{x}y}|0,1/2,1/2$)

(39) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4 ($\bar{4}_z^{-1}|0,1/2,1/2$)

(40) $\bar{4}^+$ 1/4,1/4,z; 1/4,1/4,1/4 ($\bar{4}_z|0,1/2,1/2$)

(41) $\bar{4}^-$ x,0,1/2; 0,0,1/2 ($\bar{4}_x^{-1}|0,1/2,1/2$)

(42) m x,y+1/2,$\bar{y}$ ($m_{yz}|0,1/2,1/2$)

(43) g (0,1/2,1/2) x,y,y ($m_{\bar{y}z}|0,1/2,1/2$)

(44) $\bar{4}^+$ x,1/2,0; 0,1/2,0 ($\bar{4}_x|0,1/2,1/2$)

(45) $\bar{4}^+$ -1/4,y,1/4; -1/4,1/4,1/4 ($\bar{4}_y|0,1/2,1/2$)

(46) g (-1/4,1/2,1/4) $\bar{x}$+1/4,y,x ($m_{xz}|0,1/2,1/2$)

(47) $\bar{4}^-$ 1/4,y,1/4; 1/4,1/4,1/4 ($\bar{4}_y^{-1}|0,1/2,1/2$)

(48) g (1/4,1/2,1/4) x-1/4,y,x ($m_{\bar{x}z}|0,1/2,1/2$)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2) ($1|1/2,0,1/2$)

(2) 2 (0,0,1/2) 1/4,0,z ($2_z|1/2,0,1/2$)

(3) 2 1/4,y,1/4 ($2_y|1/2,0,1/2$)

(4) 2 (1/2,0,0) x,0,1/2 ($2_x|1/2,0,1/2$)

(5) 3^+ (1/3,1/3,1/3) x+1/6,x-1/6,x ($3_{xyz}|1/2,0,1/2$)

(6) 3^+ (1/3,-1/3,1/3) $\bar{x}$+1/6,x+1/6,$\bar{x}$ ($3_{x\bar{y}z}^{-1}|1/2,0,1/2$)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$ ($3_{\bar{x}yz}^{-1}|1/2,0,1/2$)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x ($3_{xy\bar{z}}^{-1}|1/2,0,1/2$)

(9) 3^- (1/3,1/3,1/3) x-1/6,x-1/3,x ($3_{xyz}^{-1}|1/2,0,1/2$)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$ ($3_{\bar{x}yz}|1/2,0,1/2$)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$, x ($3_{xy\bar{z}}|1/2,0,1/2$)

(12) 3^- (1/3,-1/3,1/3) $\bar{x}$-1/6, x+1/3,$\bar{x}$ ($3_{x\bar{y}z}|1/2,0,1/2$)

(13) 2 (1/4,1/4,0) x,x-1/4,1/4 ($2_{xy}|1/2,0,1/2$)

(14) 2 (1/4,-1/4,0) x,$\bar{x}$+1/4,1/4 ($2_{\bar{x}y}|1/2,0,1/2$)

(15) 4^- (0,0,1/2) 1/4,-1/4,z ($4_z^{-1}|1/2,0,1/2$)

(16) 4^+ (0,0,1/2) 1/4,1/4,z ($4_z|1/2,0,1/2$)

(17) 4^- (1/2,0,0) x,1/4,1/4 ($4_x^{-1}|1/2,0,1/2$)

(18) 2 (0,1/4,1/4) 1/4,y-1/4,y ($2_{yz}|1/2,0,1/2$)

(19) 2 (0,-1/2,1/2) 1/4,y+1/4,$\bar{y}$ ($2_{\bar{y}z}|1/2,0,1/2$)

(20) 4^+ (1/2,0,0) x,-1/4,1/4 ($4_x|1/2,0,1/2$)

(21) 4^+ 1/2,y,0 ($4_y|1/2,0,1/2$)

(22) 2 (1/2,0,1/2) x,0,x ($2_{xz}|1/2,0,1/2$)

(23) 4^- 0,y,1/2 ($4_y^{-1}|1/2,0,1/2$)

(24) 2 $\bar{x}$+1/2,0,x ($2_{\bar{x}z}|1/2,0,1/2$)

(25) $\bar{1}$ 1/4,0,1/4
($\bar{1}$|1/2,0,1/2)

(26) a x,y,1/4
(m_z|1/2,0,1/2)

(27) n (1/2,0,1/2) x,0,z
(m_y|1/2,0,1/2)

(28) c 1/4,y,z
(m_x|1/2,0,1/2)

(29) $\bar{3}^+$ x-1/2,x-1/2,x; 0,0,1/2
($\bar{3}_{xyz}$|1/2,0,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1/2,$\bar{x}$; 0,0,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(31) $\bar{3}^+$ x+1/2,$\bar{x}$+1/2,$\bar{x}$; 1/2,1/2,0
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$-1/2,x; 1/2,-1/2,0
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(33) $\bar{3}^-$ x+1/2,x,x; 1/2,0,0
($\bar{3}_{xyz}^{-1}$|1/2,0,1/2)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1,$\bar{x}$; 0,-1/2,1/2
($\bar{3}_{\bar{x}yz}$|1/2,0,1/2)

(35) $\bar{3}^-$ $\bar{x}$+1/2,$\bar{x}$+1, x; 0,1/2,1/2
($\bar{3}_{xy\bar{z}}$|1/2,0,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1/2, x,$\bar{x}$; 1/2,0,0
($\bar{3}_{x\bar{y}z}$|1/2,0,1/2)

(37) g (1/4,-1/4,1/2) x+1/4,$\bar{x}$,z
(m_{xy}|1/2,0,1/2)

(38) g (1/4,1/4,1/2) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,1/2)

(39) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z^{-1}$|1/2,0,1/2)

(40) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
($\bar{4}_z$|1/2,0,1/2)

(41) $\bar{4}^-$ x,-1/4,1/4; 1/4,-1/4,1/4
($\bar{4}_x^{-1}$|1/2,0,1/2)

(42) g (1/2,-1/4,1/4) x,y+1/4,$\bar{y}$
(m_{yz}|1/2,0,1/2)

(43) g (1/2,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}$|1/2,0,1/2)

(44) $\bar{4}^+$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x$|1/2,0,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,0,1/2
($\bar{4}_y$|1/2,0,1/2)

(46) m $\bar{x}$+1/2,y,x
(m_{xz}|1/2,0,1/2)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,0,0
($\bar{4}_y^{-1}$|1/2,0,1/2)

(48) g (1/2,0,1/2) x,y,x
($m_{\bar{x}z}$|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3) x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ (1/3,1/3,-1/3) $\bar{x}$+1/6,$\bar{x}$+1/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(9) 3^- (1/3,1/3,1/3) x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\bar{x}$+1/2,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,0)

(11) 3^- (1/3,1/3,-1/3) $\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- $\bar{x}$, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,0)

(13) 2 (1/2,1/2,0) x,x,0
(2_{xy}|1/2,1/2,0)

(14) 2 x,$\bar{x}$+1/2,0
($2_{\bar{x}y}$|1/2,1/2,0)

(15) 4^- 1/2,0,z
(4_z^{-1}|1/2,1/2,0)

(16) 4^+ 0,1/2,z
(4_z|1/2,1/2,0)

(17) 4^- (1/2,0,0) x,1/4,-1/4
(4_x^{-1}|1/2,1/2,0)

(18) 2 (0,1/4,1/4) 1/4,y+1/4,y
(2_{yz}|1/2,1/2,0)

(19) 2 (0,1/4,-1/4) 1/4,y+1/4,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,0)

(20) 4^+ (1/2,0,0) x,1/4,1/4
(4_x|1/2,1/2,0)

(21) 4^+ (0,1/2,0) 1/4,y,-1/4
(4_y|1/2,1/2,0)

(22) 2 (1/4,0,1/4) x+1/4,1/4,x
(2_{xz}|1/2,1/2,0)

(23) 4^- (0,1/2,0) 1/4,y,1/4
(4_y^{-1}|1/2,1/2,0)

(24) 2 (1/4,0,-1/4)$\bar{x}$+1/4,1/4,x
($2_{\bar{x}z}$|1/2,1/2,0)

(25) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(26) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(27) a x,1/4,z
(m_y|1/2,1/2,0)

(28) b 1/4,y,z
(m_x|1/2,1/2,0)

(29) $\bar{3}^+$ x+1/2,x,x; 1/2,0,0
($\bar{3}_{xyz}$|1/2,1/2,0)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1,$\bar{x}$; 0,1/2,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(31) $\bar{3}^+$ x-1/2,$\bar{x}$+1,$\bar{x}$; 0,1/2,-1/2
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$,x; 1/2,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(33) $\bar{3}^-$ x,x+1/2,x; 0,1/2,0
($\bar{3}_{xyz}^{-1}$|1/2,1/2,0)

(34) $\bar{3}^-$ x+1,$\bar{x}$-1/2,$\bar{x}$; 1/2,0,1/2
($\bar{3}_{\bar{x}yz}$|1/2,1/2,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2, x; 0,1/2,0
($\bar{3}_{xy\bar{z}}$|1/2,1/2,0)

(36) $\bar{3}^-$ $\bar{x}$+1, x-1/2,$\bar{x}$; 1/2,0,-1/2
($\bar{3}_{x\bar{y}z}$|1/2,1/2,0)

(37) m x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,0)

(38) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

(39) $\bar{4}^-$ 0,1/2,z; 0,1/2,0
($\bar{4}_z^{-1}$|1/2,1/2,0)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,0
($\bar{4}_z$|1/2,1/2,0)

(41) $\bar{4}^-$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x^{-1}$|1/2,1/2,0)

(42) g (1/2,1/4,-1/4) x,y+1/4,$\bar{y}$
(m_{yz}|1/2,1/2,0)

(43) g (1/2,1/4,1/4) x,y+1/4,y

(44) $\bar{4}^+$ x,1/4,-1/4; 1/4,1/4,-1/4
($\bar{4}_x$|1/2,1/2,0)

(45) $\bar{4}^+$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y$|1/2,1/2,0)

(46) g (1/4,1/2,-1/4) $\bar{x}$+1/4,y,x
(m_{xz}|1/2,1/2,0)

(47) $\bar{4}^-$ 1/4,y,-1/4; 1/4,1/4,-1/4
($\bar{4}_y^{-1}$|1/2,1/2,0)

(48) g (1/4,1/2,1/4) x+1/4,y,x
($m_{\bar{x}z}$|1/2,1/2,0)

226 Fm$\bar{3}$c

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(16) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/2,0
(4_x^{-1}|1/2,1/2,1/2)

(18) 2 (0,1/2,1/2) 1/4,y,y
(2_{yz}|1/2,1/2,1/2)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/2,0,0) x,0,1/2
(4_x|1/2,1/2,1/2)

(21) 4^+ (0,1/2,0) 1/2,y,0
(4_y|1/2,1/2,1/2)

(22) 2 (1/2,0,1/2) x,1/4,x
(2_{xz}|1/2,1/2,1/2)

(23) 4^- (0,1/2,0) 0,y,1/2
(4_y^{-1}|1/2,1/2,1/2)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) m x,y,0
(m_z|0,0,0)

(27) m x,0,z
(m_y|0,0,0)

(28) m 0,y,z
(m_x|0,0,0)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(31) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(32) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(36) $\bar{3}^-$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

(37) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(39) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(41) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(42) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(44) $\bar{4}^+$ x,1/2,0; 1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

(46) b $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x
($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- $\bar{x}$-1/2, x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

(13) 2 (1/4,1/4,0) x,x-1/4,0
(2_{xy}|1/2,0,0)

(14) 2 (1/4,-1/4,0) x,$\bar{x}$+1/4,0
($2_{\bar{x}y}$|1/2,0,0)

(15) 4^- 1/4,-1/4,z
(4_z^{-1}|1/2,0,0)

(16) 4^+ 1/4,1/4,z
(4_z|1/2,0,0)

(17) 4^- (1/2,0,0) x,0,0
(4_x^{-1}|1/2,0,0)

(18) 2 1/4,y,y
(2_{yz}|1/2,0,0)

(19) 2 1/4,y ,$\bar{y}$
($2_{\bar{y}z}$|1/2,0,0)

(20) 4^+ (1/2,0,0) x,0,0
(4_x|1/2,0,0)

(21) 4^+ 1/4,y,-1/4
(4_y|1/2,0,0)

(22) 2 (1/4,0,1/4) x+1/4,0,x
(2_{xz}|1/2,0,0)

(23) 4^- 1/4,y,1/4
(4_y^{-1}|1/2,0,0)

(24) 2 (1/4,0,-1/4) $\bar{x}$+1/4,0,x
($2_{\bar{x}z}$|1/2,0,0)

(25) $\bar{1}$ 0,1/4,1/4
($\bar{1}$|0,1/2,1/2)

(26) b x,y,1/4
(m_z|0,1/2,1/2)

(27) c x,1/4,z
(m_y|0,1/2,1/2)

(28) n (0,1/2,1/2) 0,y,z
(m_x|0,1/2,1/2)

(29) $\bar{3}^+$ x,x+1/2,x;
0,1/2,0
($\bar{3}_{xyz}$|0,1/2,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1/2,$\bar{x}$;
-1/2,0,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|0,1/2,1/2)

(31) $\bar{3}^+$ x,$\bar{x}$+1/2,$\bar{x}$;
0,1/2,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(32) $\bar{3}^+$ $\bar{x}$-1,$\bar{x}$+1/2,x;
1/2,0,1/2
($\bar{3}_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(33) $\bar{3}^-$ x-1/2,x-1/2,x;
0,0,1/2
($\bar{3}_{xyz}^{-1}$|0,1/2,1/2)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
0,0,1/2
($\bar{3}_{\bar{x}yz}$|0,1/2,1/2)

(35) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2, x;
-1/2,1/2,0
($\bar{3}_{xy\bar{z}}$|0,1/2,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1/2, x+1/2,$\bar{x}$;
1/2,1/2,0
($\bar{3}_{x\bar{y}z}$|0,1/2,1/2)

(37) g (1/4,-1/4,0) x+1/4,$\bar{x}$,z
(m_{xy}|1/2,0,0)

(38) g (1/4,1/4,0) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,0)

(39) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,0
($\bar{4}_z^{-1}$|1/2,0,0)

(40) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(41) $\bar{4}^-$ x,0,0; 1/4,0,0
($\bar{4}_x^{-1}$|1/2,0,0)

(42) a x,y,$\bar{y}$
(m_{yz}|1/2,0,0)

(43) a x,y,y
($m_{\bar{y}z}$|1/2,0,0)

(44) $\bar{4}^+$ x,0,0; 1/4,0,0
($\bar{4}_x$|1/2,0,0)

(45) $\bar{4}^+$ 1/4,y,1/4; 1/4,0,1/4
($\bar{4}_y$|1/2,0,0)

(46) g (1/4,0,-1/4) $\bar{x}$+1/4,y,x
(m_{xz}|1/2,0,0)

(47) $\bar{4}^-$ 1/4,y,-1/4; 1/4,0,-1/4
($\bar{4}_y^{-1}$|1/2,0,0)

(48) g (1/4,0,1/4) x+1/4,y,x
($m_{\bar{x}z}$|1/2,0,0)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+1/6,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$, x
($3_{xy\bar{z}}$|1/2,0,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) 2 (1/4,1/4,0) x,x+1/4,0
($2_{xy}|0,1/2,0$)

(14) 2 (-1/4,1/4,0) x,$\overline{x}$+1/4,0
($2_{\overline{x}y}|0,1/2,0$)

(15) 4^- 1/4,1/4,z
($4_z^{-1}|0,1/2,0$)

(16) 4^+ -1/4,1/4,z
($4_z|0,1/2,0$)

(17) 4^- x,1/4,-1/4
($4_x^{-1}|0,1/2,0$)

(18) 2 (0,1/4,1/4) 0,y+1/4,y
($2_{yz}|0,1/2,0$)

(19) 2 (0,1/4,-1/4) 0,y+1/4,$\overline{y}$
($2_{\overline{y}z}|0,1/2,0$)

(20) 4^+ x,1/4,1/4
($4_x|0,1/2,0$)

(21) 4^+ (0,1/2,0) 0,y,0
($4_y|0,1/2,0$)

(22) 2 x,1/4,x
($2_{xz}|0,1/2,0$)

(23) 4^- (0,1/2,0) 0,y,0
($4_y^{-1}|0,1/2,0$)

(24) 2 $\overline{x}$,1/4,x
($2_{\overline{x}z}|0,1/2,0$)

(25) $\overline{1}$ 1/4,0,1/4
($\overline{1}|1/2,0,1/2$)

(26) a x,y,1/4
($m_z|1/2,0,1/2$)

(27) n (1/2,0,1/2) x,0,z
($m_y|1/2,0,1/2$)

(28) c 1/4,y,z
($m_x|1/2,0,1/2$)

(29) $\overline{3}^+$ x-1/2,x-1/2,x; 0,0,1/2
($\overline{3}_{xyz}|1/2,0,1/2$)

(30) $\overline{3}^+$ $\overline{x}$-1/2,x+1/2,$\overline{x}$; 0,0,1/2
($\overline{3}_{x\overline{y}z}^{-1}|1/2,0,1/2$)

(31) $\overline{3}^+$ x+1/2,$\overline{x}$+1/2,$\overline{x}$; 1/2,1/2,0
($\overline{3}_{\overline{x}yz}^{-1}|1/2,0,1/2$)

(32) $\overline{3}^+$ $\overline{x}$+1/2,$\overline{x}$-1/2,x; 1/2,-1/2,0
($\overline{3}_{xy\overline{z}}^{-1}|1/2,0,1/2$)

(33) $\overline{3}^-$ x+1/2,x,x; 1/2,0,0
($\overline{3}_{xyz}^{-1}|1/2,0,1/2$)

(34) $\overline{3}^-$ x+1/2,$\overline{x}$-1,$\overline{x}$; 0,-1/2,1/2
($\overline{3}_{\overline{x}yz}|1/2,0,1/2$)

(35) $\overline{3}^-$ $\overline{x}$+1/2,$\overline{x}$+1, x; 0,1/2,1/2
($\overline{3}_{xy\overline{z}}|1/2,0,1/2$)

(36) $\overline{3}^-$ $\overline{x}$+1/2, x,$\overline{x}$; 1/2,0,0
($\overline{3}_{x\overline{y}z}|1/2,0,1/2$)

(37) g (-1/4,1/4,0) x+1/4,$\overline{x}$,z
($m_{xy}|0,1/2,0$)

(38) g (1/4,1/4,0) x-1/4,x,z
($m_{\overline{x}y}|0,1/2,0$)

(39) $\overline{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\overline{4}_z^{-1}|0,1/2,0$)

(40) $\overline{4}^+$ 1/4,1/4,z; 1/4,1/4,0
($\overline{4}_z|0,1/2,0$)

(41) $\overline{4}^-$ x,1/4,1/4; 0,1/4,1/4
($\overline{4}_x^{-1}|0,1/2,0$)

(42) g (0,1/4,-1/4) x,y+1/4,$\overline{y}$
($m_{yz}|0,1/2,0$)

(43) g (0,1/4,1/4) x,y+1/4,y
($m_{\overline{y}z}|0,1/2,0$)

(44) $\overline{4}^+$ x,1/4,-1/4; 0,1/4,-1/4
($\overline{4}_x|0,1/2,0$)

(45) $\overline{4}^+$ 0,y,0; 0,1/4,0
($\overline{4}_y|0,1/2,0$)

(46) b $\overline{x}$,y,x
($m_{xz}|0,1/2,0$)

(47) $\overline{4}^-$ 0,y,0; 0,1/4,0
($\overline{4}_y^{-1}|0,1/2,0$)

(48) b x,y,x
($m_{\overline{x}z}|0,1/2,0$)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 1/4,1/4,z
($2_z|1/2,1/2,0$)

(3) 2 (0,1/2,0) 1/4,y,0
($2_y|1/2,1/2,0$)

(4) 2 (1/2,0,0) x,1/4,0
($2_x|1/2,1/2,0$)

(5) 3^+ (1/3,1/3,1/3) x+1/6,x+1/3,x
($3_{xyz}|1/2,1/2,0$)

(6) 3^+ $\overline{x}$+1/2,x,$\overline{x}$
($3_{x\overline{y}z}^{-1}|1/2,1/2,0$)

(7) 3^+ x+1/2,$\overline{x}$,$\overline{x}$
($3_{\overline{x}yz}^{-1}|1/2,1/2,0$)

(8) 3^+ (1/3,1/3,-1/3) $\overline{x}$+1/6,$\overline{x}$+1/3,x
($3_{xy\overline{z}}^{-1}|1/2,1/2,0$)

(9) 3^- (1/3,1/3,1/3) x+1/3,x+1/6,x
($3_{xyz}^{-1}|1/2,1/2,0$)

(10) 3^- x,$\overline{x}$+1/2,$\overline{x}$
($3_{\overline{x}yz}|1/2,1/2,0$)

(11) 3^- (1/3,1/3,-1/3) $\overline{x}$+1/3,$\overline{x}$+1/6, x
($3_{xy\overline{z}}|1/2,1/2,0$)

(12) 3^- $\overline{x}$, x+1/2,$\overline{x}$
($3_{\overline{x}\overline{y}z}|1/2,1/2,0$)

(13) 2 x,x,1/4
($2_{xy}|0,0,1/2$)

(14) 2 x,$\overline{x}$,1/4
($2_{\overline{x}y}|0,0,1/2$)

(15) 4^- (0,0,1/2) 0,0,z
($4_z^{-1}|0,0,1/2$)

(16) 4^+ (0,0,1/2) 0,0,z
($4_z|0,0,1/2$)

(17) 4^- x,1/4,1/4
($4_x^{-1}|0,0,1/2$)

(18) 2 (0,1/4,1/4) 0,y-1/4,y
($2_{yz}|0,0,1/2$)

(19) 2 (0,-1/4,1/4) 0,y+1/4,$\overline{y}$
($2_{\overline{y}z}|0,0,1/2$)

(20) 4^+ x,-1/4,1/4
($4_x|0,0,1/2$)

(21) 4^+ 1/4,y,1/4
($4_y|0,0,1/2$)

(22) 2 (1/4,0,1/4) x-1/4,0,x
($2_{xz}|0,0,1/2$)

(23) 4^- -1/4,y,1/4
($4_y^{-1}|0,0,1/2$)

(24) 2 (-1/4,0,1/4)$\overline{x}$+1/4,0,x
($2_{\overline{x}z}|0,0,1/2$)

(25) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(26) n (1/2,1/2,0) x,y,0
(m_z|1/2,1/2,0)

(27) a x,1/4,z
(m_y|1/2,1/2,0)

(28) b 1/4,y,z
(m_x|1/2,1/2,0)

(29) $\bar{3}^+$ x+1/2,x,x; 1/2,0,0
($\bar{3}_{xyz}$|1/2,1/2,0)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1,$\bar{x}$; 0,1/2,1/2
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(31) $\bar{3}^+$ x-1/2,$\bar{x}$+1,$\bar{x}$; 0,1/2,-1/2
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$,x; 1/2,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(33) $\bar{3}^-$ x,x+1/2,x; 0,1/2,0
($\bar{3}_{xyz}^{-1}$|1/2,1/2,0)

(34) $\bar{3}^-$ x+1,$\bar{x}$-1/2,$\bar{x}$; 1/2,0,1/2
($\bar{3}_{\bar{x}yz}$|1/2,1/2,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2,x; 0,1/2,0
($\bar{3}_{xy\bar{z}}$|1/2,1/2,0)

(36) $\bar{3}^-$ $\bar{x}$+1,x-1/2,$\bar{x}$; 1/2,0,-1/2
($\bar{3}_{x\bar{y}z}$|1/2,1/2,0)

(37) c x,$\bar{x}$,z
(m_{xy}|0,0,1/2)

(38) c x,x,z
($m_{\bar{x}y}$|0,0,1/2)

(39) $\bar{4}^-$ 0,0,z; 0,0,1/4
($\bar{4}_z^{-1}$|0,0,1/2)

(40) $\bar{4}^+$ 0,0,z; 0,0,1/4
($\bar{4}_z$|0,0,1/2)

(41) $\bar{4}^-$ x,-1/4,1/4; 0,-1/4,1/4
($\bar{4}_x^{-1}$|0,0,1/2)

(42) g (0,-1/4,1/4) x,y+1/4,$\bar{y}$
(m_{yz}|0,0,1/2)

(43) g (0,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}$|0,0,1/2)

(44) $\bar{4}^+$ x,1/4,1/4; 0,1/4,1/4
($\bar{4}_x$|0,0,1/2)

(45) $\bar{4}^+$ -1/4,y,1/4; -1/4,0,1/4
($\bar{4}_y$|0,0,1/2)

(46) g (-1/4,0,1/4) $\bar{x}$+1/4,y,x
(m_{xz}|0,0,1/2)

(47) $\bar{4}^-$ 1/4,y,1/4; 1/4,0,1/4
($\bar{4}_y^{-1}$|0,0,1/2)

(48) g (1/4,0,1/4) x-1/4,y,x
($m_{\bar{x}z}$|0,0,1/2)

227 Fd$\bar{3}$ ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 0,1/4,z
(2_z|0,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,0
(2_y|1/2,1/2,0)

(4) 2 (1/2,0,0) x,0,1/4
(2_x|1/2,0,1/2)

(5) 3^+ x,x,x

(3_{xyz}|0,0,0)

(6) 3^+ (1/3,-1/3,1/3) $\bar{x}$+1/6,x+1/6,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,0,1/2)

(7) 3^+ (-1/3,1/3,1/3) x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,1/2,1/2)

(8) 3^+ (1/3,1/3,-1/3) $\bar{x}$+1/6,$\bar{x}$+1/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$+1/2,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,0)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$,x
($3_{xy\bar{z}}$|1/2,0,1/2)

(12) 3^- $\bar{x}$-1/2,x+1/2,$\bar{x}$
($3_{x\bar{y}z}$|0,1/2,1/2)

(13) 2 (1/2,1/2,0) x,x-1/4,3/8
(2_{xy}|3/4,1/4,3/4)

(14) 2 x,$\bar{x}$+1/4,1/8
($2_{\bar{x}y}$|1/4,1/4,1/4)

(15) 4^- (0,0,3/4) 1/2,1/4,z
(4_z^{-1}|1/4,3/4,3/4)

(16) 4^+ (0,0,1/4) 0,3/4,z
(4_z|3/4,3/4,1/4)

(17) 4^- (3/4,0,0) x,1/2,1/4
(4_x^{-1}|3/4,1/4,3/4)

(18) 2 (0,1/2,1/2) 3/8,y+1/4,y
(2_{yz}|3/4,3/4,1/4)

(19) 2 1/8,y+1/4,$\bar{y}$
($2_{\bar{y}z}$|1/4,1/4,1/4)

(20) 4^+ (1/4,0,0) x,0,3/4
(4_x|1/4,3/4,3/4)

(21) 4^+ (0,1/4,0) 3/4,y,0
(4_y|3/4,1/4,3/4)

(22) 2 (1/2,0,1/2) x-1/4,3/8,x
(2_{xz}|1/4,3/4,3/4)

(23) 4^- (0,3/4,0) 1/4,y,1/2
(4_y^{-1}|3/4,3/4,1/4)

(24) 2 $\bar{x}$+1/4,1/8,x
($2_{\bar{x}z}$|1/4,1/4,1/4)

(25) $\bar{1}$ 1/8,1/8,1/8
($\bar{1}$|1/4,1/4,1/4)

(26) d (1/4,3/4,0) x,y,3/8
(m_z|1/4,3/4,3/4)

(27) d (3/4,0,1/4) x,3/8,z
(m_y|3/4,3/4,1/4)

(28) d (0,1/4,3/4) 3/8,y,z
(m_x|3/4,1/4,3/4)

(29) $\bar{3}^+$ x,x,x; 1/8,1/8,1/8
($\bar{3}_{xyz}$|1/4,1/4,1/4)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$; -1/8,1/8,7/8
($\bar{3}_{x\bar{y}z}^{-1}$|3/4,1/4,3/4)

(31) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$; 1/8,7/8,-1/8
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,3/4,3/4)

(32) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x; 7/8,-1/8,1/8
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,3/4,1/4)

(33) $\bar{3}^-$ x,x,x; 1/8,1/8,1/8
($\bar{3}_{xyz}^{-1}$|1/4,1/4,1/4)

(34) $\bar{3}^-$ x+3/2,$\bar{x}$-1,$\bar{x}$; 5/8,-1/8,7/8
($\bar{3}_{\bar{x}yz}$|3/4,3/4,1/4)

(35) $\bar{3}^-$ $\bar{x}$+1/2,$\bar{x}$+3/2,x; -1/8,7/8,5/8
($\bar{3}_{xy\bar{z}}$|3/4,1/4,3/4)

(36) $\bar{3}^-$ $\bar{x}$+1,x+1/2,$\bar{x}$; 7/8,5/8,-1/8
($\bar{3}_{x\bar{y}z}$|1/4,3/4,3/4)

(37) g (1/4,-1/4,1/2) $x+1/4,\bar{x},z$
(m_{xy}|1/2,0,1/2)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,1/4
($\bar{4}_z^{-1}$|0,1/2,1/2)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,0
($\bar{4}_z$|1/2,1/2,0)

(41) $\bar{4}^-$ x,-1/4,1/4; 1/4,-1/4,1/4
($\bar{4}_x^{-1}$|1/2,0,1/2)

(42) g (1/2,1/4,-1/4) $x,y+1/4,\bar{y}$
(m_{yz}|1/2,1/2,0)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,1/2,0; 0,1/2,0
($\bar{4}_x$|0,1/2,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,0,1/2
($\bar{4}_y$|1/2,0,1/2)

(46) g (-1/4,1/2,1/4) $\bar{x}+1/4,y,x$
(m_{xz}|0,1/2,1/2)

(47) $\bar{4}^-$ 1/4,y,-1/4; 1/4,1/4,-1/4
($\bar{4}_y^{-1}$|1/2,1/2,0)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 1/4,y,1/4
(2_y|1/2,0,1/2)

(4) 2 (1/2,0,0) x,1/4,0
(2_x|1/2,1/2,0)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\bar{x}+1/2,x,\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/2,0)

(7) 3^+ $x,\bar{x},\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}+1/2,\bar{x}+1/2,x$
($3_{xy\bar{z}}^{-1}$|1/2,0,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- $x+1/2,\bar{x},\bar{x}$
($3_{\bar{x}yz}$|1/2,0,1/2)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}+1/3,\bar{x}+1/6,x$
($3_{xy\bar{z}}$|1/2,1/2,0)

(12) 3^- $\bar{x},x,\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 (3/4,3/4,0) x,x,1/8
(2_{xy}|3/4,3/4,1/4)

(14) 2 (-1/4,1/4,0) $x,\bar{x}+1/2,3/8$
($2_{\bar{x}y}$|1/4,3/4,3/4)

(15) 4^- (0,0,1/4) 1/4,0,z
(4_z^{-1}|1/4,1/4,1/4)

(16) 4^+ (0,0,3/4) 1/4,1/2,z
(4_z|3/4,1/4,3/4)

(17) 4^- (3/4,0,0) x,1/2,-1/4
(4_x^{-1}|3/4,3/4,1/4)

(18) 2 (0,1/2,1/2) 3/8,y-1/4,y
(2_{yz}|3/4,1/4,3/4)

(19) 2 1/8,y+3/4,$\bar{y}$
($2_{\bar{y}z}$|1/4,3/4,3/4)

(20) 4^+ (1/4,0,0) x,0,1/4
(4_x|1/4,1/4,1/4)

(21) 4^+ (0,3/4,0) 1/2,y,-1/4
(4_y|3/4,3/4,1/4)

(22) 2 (1/4,0,1/4) x,1/8,x
(2_{xz}|1/4,1/4,1/4)

(23) 4^- (0,1/4,0) 0,y,3/4
(4_y^{-1}|3/4,1/4,3/4)

(24) 2 (-1/4,0,1/4)$\bar{x}+1/2,3/8,x$
($2_{\bar{x}z}$|1/4,3/4,3/4)

(25) $\bar{1}$ 1/8,3/8,3/8
($\bar{1}$|1/4,3/4,3/4)

(26) d (1/4,1/4,0) x,y,1/8
(m_z|1/4,1/4,1/4)

(27) d (3/4,0,3/4) x,1/8,z
(m_y|3/4,1/4,3/4)

(28) d (0,3/4,1/4) 3/8,y,z
(m_x|3/4,3/4,1/4)

(29) $\bar{3}^+$ x,x+1/2,x;
1/8,5/8,1/8
($\bar{3}_{xyz}$|1/4,3/4,3/4)

(30) $\bar{3}^+$ $\bar{x}-1,x+3/2,\bar{x}$;
-1/8,5/8,7/8
($\bar{3}_{x\bar{y}z}^{-1}$|3/4,3/4,1/4)

(31) $\bar{3}^+$ $x,\bar{x}+1/2,\bar{x}$;
1/8,3/8,-1/8
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,1/4,1/4)

(32) $\bar{3}^+$ $\bar{x}+1,\bar{x}-1/2,x$;
7/8,-5/8,1/8
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,1/4,3/4)

(33) $\bar{3}^-$ x-1/2,x-1/2,x;
1/8,1/8,5/8
($\bar{3}_{xyz}^{-1}$|1/4,3/4,3/4)

(34) $\bar{3}^-$ $x+1,\bar{x}-3/2,\bar{x}$;
1/8,-5/8,7/8
($\bar{3}_{\bar{x}yz}$|3/4,1/4,3/4)

(35) $\bar{3}^-$ $\bar{x},\bar{x}+1,x$;
-1/8,7/8,1/8
($\bar{3}_{xy\bar{z}}$|3/4,3/4,1/4)

(36) $\bar{3}^-$ $\bar{x}+1/2,x,\bar{x}$;
3/8,1/8,-1/8
($\bar{3}_{x\bar{y}z}$|1/4,1/4,1/4)

(37) m $x+1/2,\bar{x},z$
(m_{xy}|1/2,1/2,0)

(38) g (1/4,1/4,1/2) x-1/4,x,z
($m_{\bar{x}y}$|0,1/2,1/2)

(39) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(40) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,1/4
($\bar{4}_z$|1/2,0,1/2)

(41) $\bar{4}^-$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x^{-1}$|1/2,1/2,0)

(42) g (1/2,-1/4,1/4) $x,y+1/4,\bar{y}$
(m_{yz}|1/2,0,1/2)

(43) g (0,1/2,1/2) x,y,y
($m_{\bar{y}z}$|0,1/2,1/2)

(44) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x$|0,0,0)

(45) $\bar{4}^+$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y$|1/2,1/2,0)

(46) m $\bar{x},y,x$
(m_{xz}|0,0,0)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,0,0
($\bar{4}_y^{-1}$|1/2,0,1/2)

(48) g (1/4,1/2,1/4) x-1/4,y,x
($m_{\bar{x}z}$|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ $\bar{x},x,\bar{x}$

($3_{x\bar{y}\bar{z}}^{-1}$|0,0,0)

(7) 3^+ $x+1/2,\bar{x},\bar{x}$

($3_{\bar{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ $\bar{x},\bar{x}+1/2,x$

($3_{xy\bar{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- (-1/3,1/3,1/3)
$x+1/6,\bar{x}+1/6,\bar{x}$
($3_{\bar{x}yz}$|0,1/2,1/2)

(11) 3^- $\bar{x},\bar{x},x$

($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x},x+1/2,\bar{x}$

($3_{x\bar{y}z}$|1/2,1/2,0)

(13) 2 (1/4,1/4,0) x,x,1/8
(2_{xy}|1/4,1/4,1/4)

(14) 2 (1/4,-1/4,0) $x,\bar{x}+1/2,3/8$
($2_{\bar{x}y}$|3/4,1/4,3/4)

(15) 4^- (0,0,1/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,1/4)

(16) 4^+ (0,0,3/4) -1/4,1/2,z
(4_z|1/4,3/4,3/4)

(17) 4^- (1/4,0,0) x,1/4,0
(4_x^{-1}|1/4,1/4,1/4)

(18) 2 (0,3/4,3/4) 1/8,y,y
(2_{yz}|1/4,3/4,3/4)

(19) 2 (0,-1/4,1/4) $3/8,y+1/2,\bar{y}$
($2_{\bar{y}z}$|3/4,1/4,3/4)

(20) 4^+ (3/4,0,0) x,1/4,1/2
(4_x|3/4,3/4,1/4)

(21) 4^+ (0,1/4,0) 1/4,y,0
(4_y|1/4,1/4,1/4)

(22) 2 (1/2,0,1/2) x+1/4,3/8,x
(2_{xz}|3/4,3/4,1/4)

(23) 4^- (0,3/4,0) -1/4,y,1/2
(4_y^{-1}|1/4,3/4,3/4)

(24) 2 $\bar{x}+3/4,1/8,x$
($2_{\bar{x}z}$|3/4,1/4,3/4)

(25) $\bar{1}$ 3/8,1/8,3/8
($\bar{1}$|3/4,1/4,3/4)

(26) d (3/4,3/4,0) x,y,1/8
(m_z|3/4,3/4,1/4)

(27) d (1/4,0,3/4) x,3/8,z
(m_y|1/4,3/4,3/4)

(28) d (0,1/4,1/4) 1/8,y,z
(m_x|1/4,1/4,1/4)

(29) $\bar{3}^+$ x-1/2,x-1/2,x;
1/8,1/8,5/8
($\bar{3}_{xyz}$|3/4,1/4,3/4)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1/2,$\bar{x}$;
-1/8,1/8,3/8
($\bar{3}_{x\bar{y}z}^{-1}$|1/4,1/4,1/4)

(31) $\bar{3}^+$ $x-1/2,\bar{x}+3/2,\bar{x}$;
1/8,7/8,-5/8
($\bar{3}_{\bar{x}yz}^{-1}$|3/4,3/4,1/4)

(32) $\bar{3}^+$ $\bar{x}+3/2,\bar{x}+1/2,x$;
7/8,-1/8,5/8
($\bar{3}_{xy\bar{z}}^{-1}$|1/4,3/4,3/4)

(33) $\bar{3}^-$ x+1/2,x,x;
5/8,1/8,1/8
($\bar{3}_{xyz}^{-1}$|3/4,1/4,3/4)

(34) $\bar{3}^-$ $x+1,\bar{x}-1,\bar{x}$;
1/8,-1/8,7/8
($\bar{3}_{\bar{x}yz}$|1/4,3/4,3/4)

(35) $\bar{3}^-$ $\bar{x},\bar{x}+1/2,x$;
-1/8,3/8,1/8
($\bar{3}_{xy\bar{z}}$|1/4,1/4,1/4)

(36) $\bar{3}^-$ $\bar{x}+3/2,x-1/2,\bar{x}$;
7/8,1/8,-5/8
($\bar{3}_{x\bar{y}z}$|3/4,3/4,1/4)

(37) m $x,\bar{x},z$
(m_{xy}|0,0,0)

(38) g (1/4,1/4,1/2) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,1/2)

(39) $\bar{4}^-$ 0,1/2,z; 0,1/2,0
($\bar{4}_z^{-1}$|1/2,1/2,0)

(40) $\bar{4}^+$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z$|0,1/2,1/2)

(41) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}$|0,0,0)

(42) m $x,y+1/2,\bar{y}$
(m_{yz}|0,1/2,1/2)

(43) g (1/2,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}$|1/2,0,1/2)

(44) $\bar{4}^+$ x,1/4,-1/4; 1/4,1/4,-1/4
($\bar{4}_x$|1/2,1/2,0)

(45) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y$|0,0,0)

(46) g (1/4,1/2,-1/4) $\bar{x}+1/4,y,x$
(m_{xz}|1/2,1/2,0)

(47) $\bar{4}^-$ 1/4,y,1/4; 1/4,1/4,1/4
($\bar{4}_y^{-1}$|0,1/2,1/2)

(48) g (1/2,0,1/2) x,y,x
($m_{\bar{x}z}$|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\bar{x},x+1/2,\bar{x}$

($3_{x\bar{y}\bar{z}}^{-1}$|0,1/2,1/2)

(7) 3^+ $x+1/2,\bar{x}-1/2,\bar{x}$

($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\bar{x},\bar{x},x$

($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- $x,\bar{x},\bar{x}$

($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}+1/2,\bar{x}+1/2,x$

($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) 2 (1/2,1/2,0) x,x+1/4,3/8
(2_{xy}|1/4,3/4,3/4)

(14) 2 x,$\bar{x}$+3/4,1/8
($2_{\bar{x}y}$|3/4,3/4,1/4)

(15) 4^- (0,0,3/4) 1/2,-1/4,z
(4_z^{-1}|3/4,1/4,3/4)

(16) 4^+ (0,0,1/4) 0,1/4,z
(4_z|1/4,1/4,1/4)

(17) 4^- (1/4,0,0) x,3/4,0
(4_x^{-1}|1/4,3/4,3/4)

(18) 2 (0,1/4,1/4) 1/8,y,y
(2_{yz}|1/4,1/4,1/4)

(19) 2 (0,1/4,-1/4) 3/8,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|3/4,3/4,1/4)

(20) 4^+ (3/4,0,0) x,-1/4,1/2
(4_x|3/4,1/4,3/4)

(21) 4^+ (0,3/4,0) 1/2,y,1/4
(4_y|1/4,3/4,3/4)

(22) 2 (3/4,0,3/4) x,1/8,x
(2_{xz}|3/4,1/4,3/4)

(23) 4^- (0,1/4,0) 0,y,1/4
(4_y^{-1}|1/4,1/4,1/4)

(24) 2 (1/4,0,-1/4)$\bar{x}$+1/2,3/8,x
($2_{\bar{x}z}$|3/4,3/4,1/4)

(25) $\bar{1}$ 3/8,3/8,1/8
($\bar{1}$|3/4,3/4,1/4)

(26) d (3/4,1/4,0) x,y,3/8
(m_z|3/4,1/4,3/4)

(27) d (1/4,0,1/4) x,1/8,z
(m_y|1/4,1/4,1/4)

(28) d (0,3/4,3/4) 1/8,y,z
(m_x|1/4,3/4,3/4)

(29) $\bar{3}^+$ x+1/2,x,x;
5/8,1/8,1/8
($\bar{3}_{xyz}$|3/4,3/4,1/4)

(30) $\bar{3}^+$ $\bar{x}$-3/2,x+1,$\bar{x}$;
-5/8,1/8,7/8
($\bar{3}_{x\bar{y}z}^{-1}$|1/4,3/4,3/4)

(31) $\bar{3}^+$ x+1/2,$\bar{x}$+1,$\bar{x}$;
5/8,7/8,-1/8
($\bar{3}_{\bar{x}yz}^{-1}$|3/4,1/4,3/4)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$,x;
3/8,-1/8,1/8
($\bar{3}_{xy\bar{z}}^{-1}$|1/4,1/4,1/4)

(33) $\bar{3}^-$ x,x+1/2,x;
1/8,5/8,1/8
($\bar{3}_{xyz}^{-1}$|3/4,3/4,1/4)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
1/8,-1/8,3/8
($\bar{3}_{\bar{x}yz}$|1/4,1/4,1/4)

(35) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1, x;
-5/8,7/8,1/8
($\bar{3}_{xy\bar{z}}$|1/4,3/4,3/4)

(36) $\bar{3}^-$ $\bar{x}$+1, x,$\bar{x}$;
7/8,1/8,-1/8
($\bar{3}_{x\bar{y}z}$|3/4,1/4,3/4)

(37) g (-1/4,1/4,1/2) x+1/4,$\bar{x}$,z
(m_{xy}|0,1/2,1/2)

(38) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

(39) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,1/4
($\bar{4}_z^{-1}$|1/2,0,1/2)

(40) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(41) $\bar{4}^-$ x,0,1/2; 0,0,1/2
($\bar{4}_x^{-1}$|0,1/2,1/2)

(42) m x,y,$\bar{y}$
(m_{yz}|0,0,0)

(43) g (1/2,1/4,1/4) x,y+1/4,y
($m_{\bar{y}z}$|1/2,1/2,0)

(44) $\bar{4}^+$ x,1/4,1/4; 1/4,1/4,1/4
($\bar{4}_x$|1/2,0,1/2)

(45) $\bar{4}^+$ -1/4,y,1/4; -1/4,1/4,1/4
($\bar{4}_y$|0,1/2,1/2)

(46) m $\bar{x}$+1/2,y,x
(m_{xz}|1/2,0,1/2)

(47) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}$|0,0,0)

(48) g (1/4,1/2,1/4) x+1/4,y,x
($m_{\bar{x}z}$|1/2,1/2,0)

227 Fd$\bar{3}$ ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 3/8,1/8,z
(2_z|3/4,1/4,1/2)

(3) 2 (0,1/2,0) 1/8,y,3/8
(2_y|1/4,1/2,3/4)

(4) 2 (1/2,0,0) x,3/8,1/8
(2_x|1/2,3/4,1/4)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$+1/2,x+1/4,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,3/4,1/4)

(7) 3^+ x+3/4,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|3/4,1/4,1/2)

(8) 3^+ $\bar{x}$+1/4,$\bar{x}$+3/4,x
($3_{xy\bar{z}}^{-1}$|1/4,1/2,3/4)

(9) 3^- x,x,x

(3_{xyz}^{-1}|0,0,0)

(10) 3^- (-1/3,1/3,1/3)
x+5/12,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}$|1/4,1/2,3/4)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+7/12,$\bar{x}$+5/12,x
($3_{xy\bar{z}}$|1/2,3/4,1/4)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+7/12,$\bar{x}$
($3_{x\bar{y}z}$|3/4,1/4,1/2)

(13) 2 (1/2,1/2,0) x,x-1/4,1/4
(2_{xy}|3/4,1/4,1/2)

(14) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- (0,0,3/4) 3/8,1/8,z
(4_z^{-1}|1/4,1/2,3/4)

(16) 4^+ (0,0,1/4) -1/8,5/8,z
(4_z|1/2,3/4,1/4)

(17) 4^- (3/4,0,0) x,3/8,1/8
(4_x^{-1}|3/4,1/4,1/2)

(18) 2 (0,1/2,1/2) 1/4,y+1/4,y
(2_{yz}|1/2,3/4,1/4)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ (1/4,0,0) x,-1/8,5/8
(4_x|1/4,1/2,3/4)

(21) 4^+ (0,1/4,0) 5/8,y,-1/8
(4_y|3/4,1/4,1/2)

(22) 2 (1/2,0,1/2) x-1/4,1/4,x
(2_{xz}|1/4,1/2,3/4)

(23) 4^- (0,3/4,0) 1/8,y,3/8
(4_y^{-1}|1/2,3/4,1/4)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) d (1/4,3/4,0) x,y,1/4
(m_z|1/4,3/4,1/2)

(27) d (3/4,0,1/4) x,1/4,z
(m_y|3/4,1/2,1/4)

(28) d (0,1/4,3/4) 1/4,y,z
(m_x|1/2,1/4,3/4)

(29) $\bar{3}^+$ x,x,x;
0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$-1,x+3/4,$\bar{x}$;
-1/4,0,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/4,3/4)

(31) $\bar{3}^+$ x-1/4,$\bar{x}$+1,$\bar{x}$;
0,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,3/4,1/2)

(32) $\bar{3}^+$ $\bar{x}$+3/4,$\bar{x}$-1/4,x;
3/4,-1/4,0
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,1/2,1/4)

(33) $\bar{3}^-$ x,x,x;
0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x+5/4,$\bar{x}$-1,$\bar{x}$;
1/2,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|3/4,1/2,1/4)

(35) $\bar{3}^-$ $\bar{x}$+1/4,$\bar{x}$+5/4, x;
-1/4,3/4,1/2
($\bar{3}_{xy\bar{z}}$| 1/2,1/4,3/4)

(36) $\bar{3}^-$ $\bar{x}$+1, x+1/4,$\bar{x}$;
3/4,1/2,-1/4
($\bar{3}_{x\bar{y}z}$|1/4,3/4,1/2)

(37) g (-1/4,1/4,1/2) x+1/2,$\bar{x}$,z
(m_{xy}|1/4,3/4,1/2)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ 1/8,5/8,z; 1/8,5/8,1/8
($\bar{4}_z^{-1}$|3/4,1/2,1/4)

(40) $\bar{4}^+$ 3/8,-1/8,z; 3/8,-1/8,3/8
($\bar{4}_z$|1/2,1/4,3/4)

(41) $\bar{4}^-$ x,1/8,5/8; 1/8,1/8,5/8
($\bar{4}_x^{-1}$|1/4,3/4,1/2)

(42) g (1/2,-1/4,1/4) x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/4,3/4)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,3/8,-1/8; 3/8,3/8,-1/8
($\bar{4}_x$|3/4,1/2,1/4)

(45) $\bar{4}^+$ -1/8,y,3/8; -1/8,3/8,3/8
($\bar{4}_y$|1/4,3/4,1/2)

(46) g (1/4,1/2,-1/4) $\bar{x}$+1/2,y,x
(m_{xz}|3/4,1/2,1/4)

(47) $\bar{4}^-$ 5/8,y,1/8; 5/8,1/8,1/8
($\bar{4}_y^{-1}$|1/2,1/4,3/4)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 3/8,3/8,z
(2_z|3/4,3/4,0)

(3) 2 1/8,y,1/8
(2_y|1/4,0,1/4)

(4) 2 (1/2,0,0) x,1/8,3/8
(2_x|1/2,1/4,3/4)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+5/12,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/4,3/4)

(7) 3^+ x+3/4,$\bar{x}$,$\bar{x}$

($3_{\bar{x}yz}^{-1}$|3/4,3/4,0)

(8) 3^+ $\bar{x}$+1/4,$\bar{x}$+1/4,x

($3_{xy\bar{z}}^{-1}$|1/4,0,1/4)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- x+1/4,$\bar{x}$,$\bar{x}$

($3_{\bar{x}yz}$|1/4,0,1/4)

(11) 3^- $\bar{x}$+3/4,$\bar{x}$+1/4, x

($3_{xy\bar{z}}$|1/2,1/4,3/4)

(12) 3^- $\bar{x}$, x+3/4,$\bar{x}$

($3_{x\bar{y}z}$|3/4,3/4,0)

(13) 2 (3/4,3/4,0) x,x,0
(2_{xy}|3/4,3/4,0)

(14) 2 (-1/4,1/4,0) x,$\bar{x}$+1/4,1/4
($2_{\bar{x}y}$|0,1/2,1/2)

(15) 4^- (0,0,1/4) 1/8,-1/8,z
(4_z^{-1}|1/4,0,1/4)

(16) 4^+ (0,0,3/4) 1/8,3/8,z
(4_z|1/2,1/4,3/4)

(17) 4^- (3/4,0,0) x,3/8,-3/8
(4_x^{-1}|3/4,3/4,0)

(18) 2 (0,1/2,1/2) 1/4,y-1/4,y
(2_{yz}|1/2,1/4,3/4)

(19) 2 0,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|0,1/2,1/2)

(20) 4^+ (1/4,0,0) x,-1/8,1/8
(4_x|1/4,0,1/4)

(21) 4^+ (0,3/4,0) 3/8,y,-3/8
(4_y|3/4,3/4,0)

(22) 2 (1/4,0,1/4) x,0,x
(2_{xz}|1/4,0,1/4)

(23) 4^- (0,1/4,0) -1/8,y,5/8
(4_y^{-1}|1/2,1/4,3/4)

(24) 2 (-1/4,0,1/4)$\bar{x}$+1/4,1/4,x
($2_{\bar{x}z}$|0,1/2,1/2)

(25) $\bar{1}$ 0,1/4,1/4
($\bar{1}$|0,1/2,1/2)

(26) d (1/4,1/4,0) x,y,0
(m_z|1/4,1/4,0)

(27) d (3/4,0,3/4) x,0,z
(m_y|3/4,0,3/4)

(28) d (0,3/4,1/4) 1/4,y,z
(m_x|1/2,3/4,1/4)

(29) $\bar{3}^+$ x,x+1/2,x;
0,1/2,0
($\bar{3}_{xyz}$|0,1/2,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1,x+5/4,$\bar{x}$;
-1/4,1/2,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,3/4,1/4)

(31) $\bar{3}^+$ x-1/4,$\bar{x}$+1/2,$\bar{x}$;
0,1/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,1/4,0)

(32) $\bar{3}^+$ $\bar{x}$+3/4,$\bar{x}$-3/4,x;
3/4,-3/4,0
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,0,3/4)

(33) $\bar{3}^-$ x-1/2,x-1/2,x;
0,0,1/2
($\bar{3}_{xyz}^{-1}$|0,1/2,1/2)

(34) $\bar{3}^-$ x+3/4,$\bar{x}$-3/2,$\bar{x}$;
0,-3/4,3/4
($\bar{3}_{\bar{x}yz}$|3/4,0,3/4)

(35) $\bar{3}^-$ $\bar{x}$-1/4,$\bar{x}$+3/4, x;
-1/4,3/4,0
($\bar{3}_{xy\bar{z}}$|1/2,3/4,1/4)

(36) $\bar{3}^-$ $\bar{x}$+1/2, x-1/4,$\bar{x}$;
1/4,0,-1/4
($\bar{3}_{x\bar{y}z}$|1/4,1/4,0)

(37) m x+1/4,$\bar{x}$,z
(m_{xy}|1/4,1/4,0)

(38) g (1/4,1/4,1/2) x-1/4,x,z
($m_{\bar{x}y}$|0,1/2,1/2)

(39) $\bar{4}^-$ 3/8,3/8,z; 3/8,3/8,3/8
($\bar{4}_z^{-1}$|3/4,0,3/4)

(40) $\bar{4}^+$ 5/8,1/8,z; 5/8,1/8,1/8
($\bar{4}_z$|1/2,3/4,1/4)

(41) $\bar{4}^-$ x,1/8,1/8; 1/8,1/8,1/8
($\bar{4}_x^{-1}$|1/4,1/4,0)

(42) g (1/2,1/4,-1/4) x,y+1/2,$\bar{y}$
(m_{yz}|1/2,3/4,1/4)

(43) g (0,1/2,1/2) x,y,y
($m_{\bar{y}z}$|0,1/2,1/2)

(44) $\bar{4}^+$ x,3/8,3/8; 3/8,3/8,3/8
($\bar{4}_x$|3/4,0,3/4)

(45) $\bar{4}^+$ 1/8,y,1/8; 1/8,1/8,1/8
($\bar{4}_y$|1/4,1/4,0)

(46) m $\bar{x}$+3/4,y,x
(m_{xz}|3/4,0,3/4)

(47) $\bar{4}^-$ 3/8,y,-1/8; 3/8,3/8,-1/8
($\bar{4}_y^{-1}$|1/2,3/4,1/4)

(48) g (1/4,1/2,1/4) x-1/4,y,x
($m_{\bar{x}z}$|0,1/2,1/2)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 1/8,1/8,z
(2_z|1/4,1/4,0)

(3) 2 (0,1/2,0) 3/8,y,1/8
(2_y|3/4,1/2,1/4)

(4) 2 x,3/8,3/8
(2_x|0,3/4,3/4)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ $\bar{x}$,x+3/4,$\bar{x}$

($3_{x\bar{y}z}^{-1}$|0,3/4,3/4)

(7) 3^+ x+1/4,$\bar{x}$,$\bar{x}$

($3_{\bar{x}yz}^{-1}$|1/4,1/4,0)

(8) 3^+ (1/3,1/3,-1/3)
$\bar{x}$+5/12,$\bar{x}$+7/12,x
($3_{xy\bar{z}}^{-1}$|3/4,1/2,1/4)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- x+1/4,$\bar{x}$+1/2,$\bar{x}$

($3_{\bar{x}yz}$|3/4,1/2,1/4)

(11) 3^- $\bar{x}$+3/4,$\bar{x}$+3/4, x

($3_{xy\bar{z}}$|0,3/4,3/4)

(12) 3^- $\bar{x}$, x+1/4,$\bar{x}$

($3_{x\bar{y}z}$|1/4,1/4,0)

(13) 2 (1/4,1/4,0) x,x,0
(2_{xy}|1/4,1/4,0)

(14) 2 (1/4,-1/4,0) x,$\bar{x}$+1/4,1/4
($2_{\bar{x}y}$|1/2,0,1/2)

(15) 4^- (0,0,1/4) 5/8,-1/8,z
(4_z^{-1}|3/4,1/2,1/4)

(16) 4^+ (0,0,3/4) -3/8,3/8,z
(4_z|0,3/4,3/4)

(17) 4^- (1/4,0,0) x,1/8,-1/8
(4_x^{-1}|1/4,1/4,0)

(18) 2 (0,3/4,3/4) 0,y,y
(2_{yz}|0,3/4,3/4)

(19) 2 (0,-1/4,1/4) 1/4,y+1/4,$\bar{y}$
($2_{\bar{y}z}$|1/2,0,1/2)

(20) 4^+ (3/4,0,0) x,1/8,3/8
(4_x|3/4,1/2,1/4)

(21) 4^+ (0,1/4,0) 1/8,y,-1/8
(4_y|1/4,1/4,0)

(22) 2 (1/2,0,1/2) x+1/4,1/4,x
(2_{xz}|3/4,1/2,1/4)

(23) 4^- (0,3/4,0) -3/8,y,3/8
(4_y^{-1}|0,3/4,3/4)

(24) 2 $\bar{x}$+1/2,0,x
($2_{\bar{x}z}$|1/2,0,1/2)

(25) $\bar{1}$ 1/4,0,1/4
($\bar{1}$|1/2,0,1/2)

(26) d (3/4,3/4,0) x,y,0
(m_z|3/4,3/4,0)

(27) d (1/4,0,3/4) x,1/4,z
(m_y|1/4,1/2,3/4)

(28) d (0,1/4,1/4) 0,y,z
(m_x|0,1/4,1/4)

(29) $\bar{3}^+$ x-1/2,x-1/2,x;
0,0,1/2
($\bar{3}_{xyz}$|1/2,0,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1/4,$\bar{x}$;
-1/4,0,1/4
($\bar{3}_{x\bar{y}z}^{-1}$|0,1/4,1/4)

(31) $\bar{3}^+$ x-3/4,$\bar{x}$+3/2,$\bar{x}$;
0,3/4,-3/4
($\bar{3}_{\bar{x}yz}^{-1}$|3/4,3/4,0)

(32) $\bar{3}^+$ $\bar{x}$+5/4,$\bar{x}$+1/4,x;
3/4,-1/4,1/2
($\bar{3}_{xy\bar{z}}^{-1}$|1/4,1/2,3/4)

(33) $\bar{3}^-$ x+1/2,x,x;
1/2,0,0
($\bar{3}_{xyz}^{-1}$|1/2,0,1/2)

(34) $\bar{3}^-$ x+3/4,$\bar{x}$-1,$\bar{x}$;
0,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|1/4,1/2,3/4)

(35) $\bar{3}^-$ $\bar{x}$-1/4,$\bar{x}$+1/4, x;
-1/4,1/4,0
($\bar{3}_{xy\bar{z}}$|0,1/4,1/4)

(36) $\bar{3}^-$ $\bar{x}$+3/2, x-3/4,$\bar{x}$;
3/4,0,-3/4
($\bar{3}_{x\bar{y}z}$|3/4,3/4,0)

(37) m x+3/4,$\bar{x}$,z
(m_{xy}|3/4,3/4,0)

(38) g (1/4,1/4,1/2) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,1/2)

(39) $\bar{4}^-$ -1/8,3/8,z; -1/8,3/8,3/8
($\bar{4}_z^{-1}$|1/4,1/2,3/4)

(40) $\bar{4}^+$ 1/8,1/8,z; 1/8,1/8,1/8
($\bar{4}_z$|0,1/4,1/4)

(41) $\bar{4}^-$ x,3/8,3/8; 3/8,3/8,3/8
($\bar{4}_x^{-1}$|3/4,3/4,0)

(42) m x,y+1/4,$\bar{y}$
(m_{yz}|0,1/4,1/4)

(43) g (1/2,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}$|1/2,0,1/2)

(44) $\bar{4}^+$ x,5/8,1/8; 1/8,5/8,1/8
($\bar{4}_x$|1/4,1/2,3/4)

(45) $\bar{4}^+$ 3/8,y,3/8; 3/8,3/8,3/8
($\bar{4}_y$|3/4,3/4,0)

(46) g (-1/4,1/2,1/4) $\bar{x}$+1/2,y,x
(m_{xz}|1/4,1/2,3/4)

(47) $\bar{4}^-$ 1/8,y,1/8; 1/8,1/8,1/8
($\bar{4}_y^{-1}$|0,1/4,1/4)

(48) g (1/2,0,1/2) x,y,x
($m_{\bar{x}z}$|1/2,0,1/2)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/8,3/8,z
(2_z|1/4,3/4,1/2)

(3) 2 3/8,y,3/8
(2_y|3/4,0,3/4)

(4) 2 x,1/8,1/8
(2_x|0,1/4,1/4)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$,x+1/4,$\overline{x}$

($3_{x\bar{y}z}^{-1}$|0,1/4,1/4)

(7) 3^+ (-1/3,1/3,1/3)
x+7/12,$\overline{x}$-1/6,$\overline{x}$
($3_{\bar{x}yz}^{-1}$|1/4,3/4,1/2)

(8) 3^+ $\overline{x}$+3/4,$\overline{x}$+3/4,x

($3_{xy\bar{z}}^{-1}$|3/4,0,3/4)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x+3/4,$\overline{x}$,$\overline{x}$

($3_{\bar{x}yz}$|3/4,0,3/4)

(11) 3^- $\overline{x}$+1/4,$\overline{x}$+1/4, x

($3_{xy\bar{z}}$|0,1/4,1/4)

(12) 3^- $\overline{x}$-1/2, x+3/4,$\overline{x}$

($3_{x\bar{y}z}$|1/4,3/4,1/2)

(13) 2 (1/2,1/2,0) x,x+1/4,1/4
(2_{xy}|1/4,3/4,1/2)

(14) 2 x,$\overline{x}$+1/2,0
($2_{\bar{x}y}$|1/2,1/2,0)

(15) 4^- (0,0,3/4) 3/8,-3/8,z
(4_z^{-1}|3/4,0,3/4)

(16) 4^+ (0,0,1/4) -1/8,1/8,z
(4_z|0,1/4,1/4)

(17) 4^- (1/4,0,0) x,5/8,-1/8
(4_x^{-1}|1/4,3/4,1/2)

(18) 2 (0,1/4,1/4) 0,y,y
(2_{yz}|0,1/4,1/4)

(19) 2 (0,1/4,-1/4) 1/4,y+1/4,$\overline{y}$
($2_{\bar{y}z}$|1/2,1/2,0)

(20) 4^+ (3/4,0,0) x,-3/8,3/8
(4_x|3/4,0,3/4)

(21) 4^+ (0,3/4,0) 3/8,y,1/8
(4_y|1/4,3/4,1/2)

(22) 2 (3/4,0,3/4) x,0,x
(2_{xz}|3/4,0,3/4)

(23) 4^- (0,1/4,0) -1/8,y,1/8
(4_y^{-1}|0,1/4,1/4)

(24) 2 (1/4,0,-1/4)$\overline{x}$+1/4,1/4,x
($2_{\bar{x}z}$|1/2,1/2,0)

(25) $\overline{1}$ 1/4,1/4,0
($\overline{1}$|1/2,1/2,0)

(26) d (3/4,1/4,0) x,y,1/4
(m_z|3/4,1/4,1/2)

(27) d (1/4,0,1/4) x,0,z
(m_y|1/4,0,1/4)

(28) d (0,3/4,3/4) 0,y,z
(m_x|0,3/4,3/4)

(29) $\overline{3}^+$ x+1/2,x,x;
1/2,0,0
($\overline{3}_{xyz}$|1/2,1/2,0)

(30) $\overline{3}^+$ $\overline{x}$-3/2,x+3/4,$\overline{x}$;
-3/4,0,3/4
($\overline{3}_{x\bar{y}z}^{-1}$|0,3/4,3/4)

(31) $\overline{3}^+$ x+1/4,$\overline{x}$+1,$\overline{x}$;
1/2,3/4,-1/4
($\overline{3}_{\bar{x}yz}^{-1}$|3/4,1/4,1/2)

(32) $\overline{3}^+$ $\overline{x}$+1/4,$\overline{x}$-1/4,x;
1/4,-1/4,0
($\overline{3}_{xy\bar{z}}^{-1}$|1/4,0,1/4)

(33) $\overline{3}^-$ x,x+1/2,x;
0,1/2,0
($\overline{3}_{xyz}^{-1}$|1/2,1/2,0)

(34) $\overline{3}^-$ x+1/4,$\overline{x}$-1/2,$\overline{x}$;
0,-1/4,1/4
($\overline{3}_{\bar{x}yz}$|1/4,0,1/4)

(35) $\overline{3}^-$ $\overline{x}$-3/4,$\overline{x}$+3/4, x;
-3/4,3/4,0
($\overline{3}_{xy\bar{z}}$|0,3/4,3/4)

(36) $\overline{3}^-$ $\overline{x}$+1, x-1/4,$\overline{x}$;
3/4,0,-1/4
($\overline{3}_{x\bar{y}z}$|3/4,1/4,1/2)

(37) g (1/4,-1/4,1/2) x+1/2,$\overline{x}$,z
(m_{xy}|3/4,1/4,1/2)

(38) g (1/2,1/2,0) x,x,z
($m_{\bar{x}y}$|1/2,1/2,0)

(39) $\overline{4}^-$ 1/8,1/8,z; 1/8,1/8,1/8
($\overline{4}_z^{-1}$|1/4,0,1/4)

(40) $\overline{4}^+$ 3/8,3/8,z; 3/8,3/8,3/8
($\overline{4}_z$|0,3/4,3/4)

(41) $\overline{4}^-$ x,-1/8,3/8; 3/8,-1/8,3/8
($\overline{4}_x^{-1}$|3/4,1/4,1/2)

(42) m x,y+3/4,$\overline{y}$
(m_{yz}|0,3/4,3/4)

(43) g (1/2,1/4,1/4) x,y+1/4,y
($m_{\bar{y}z}$|1/2,1/2,0)

(44) $\overline{4}^+$ x,1/8,1/8; 1/8,1/8,1/8
($\overline{4}_x$|1/4,0,1/4)

(45) $\overline{4}^+$ 1/8,y,5/8; 1/8,1/8,5/8
($\overline{4}_y$|3/4,1/4,1/2)

(46) m $\overline{x}$+1/4,y,x
(m_{xz}|1/4,0,1/4)

(47) $\overline{4}^-$ 3/8,y,3/8; 3/8,3/8,3/8
($\overline{4}_y^{-1}$|0,3/4,3/4)

(48) g (1/4,1/2,1/4) x+1/4,y,x
($m_{\bar{x}z}$|1/2,1/2,0)

228 $Fd\bar{3}c$ ORIGIN CHOICE 1

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 (0,0,1/2) 0,1/4,z
($2_z|0,1/2,1/2$)

(3) 2 (0,1/2,0) 1/4,y,0
($2_y|1/2,1/2,0$)

(4) 2 (1/2,0,0) x,0,1/4
($2_x|1/2,0,1/2$)

(5) 3^+ x,x,x

($3_{xyz}|0,0,0$)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+1/6,$\bar{x}$
($3_{x\bar{y}z}^{-1}|1/2,0,1/2$)

(7) 3^+ (-1/3,1/3,1/3)
x+1/3,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,1/2,1/2$)

(8) 3^+ (1/3,1/3,-1/3)
$\bar{x}$+1/6,$\bar{x}$+1/3,x
($3_{xy\bar{z}}^{-1}|1/2,1/2,0$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- x,$\bar{x}$+1/2,$\bar{x}$
($3_{\bar{x}yz}|1/2,1/2,0$)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$,x
($3_{xy\bar{z}}|1/2,0,1/2$)

(12) 3^- $\bar{x}$-1/2, x+1/2,$\bar{x}$
($3_{x\bar{y}z}|0,1/2,1/2$)

(13) 2 (1/2,1/2,0) x,x-1/4,3/8
($2_{xy}|3/4,1/4,3/4$)

(14) 2 x,$\bar{x}$+1/4,1/8
($2_{\bar{x}y}|1/4,1/4,1/4$)

(15) 4^- (0,0,3/4) 1/2,1/4,z
($4_z^{-1}|1/4,3/4,3/4$)

(16) 4^+ (0,0,1/4) 0,3/4,z
($4_z|3/4,3/4,1/4$)

(17) 4^- (3/4,0,0) x,1/2,1/4
($4_x^{-1}|3/4,1/4,3/4$)

(18) 2 (0,1/2,1/2) 3/8,y+1/4,y
($2_{yz}|3/4,3/4,1/4$)

(19) 2 1/8,y+1/4,$\bar{y}$
($2_{\bar{y}z}|1/4,1/4,1/4$)

(20) 4^+ (1/4,0,0) x,0,3/4
($4_x|1/4,3/4,3/4$)

(21) 4^+ (0,1/4,0) 3/4,y,0
($4_y|3/4,1/4,3/4$)

(22) 2 (1/2,0,1/2) x-1/4,3/8,x
($2_{xz}|1/4,3/4,3/4$)

(23) 4^- (0,3/4,0) 1/4,y,1/2
($4_y^{-1}|3/4,3/4,1/4$)

(24) 2 $\bar{x}$+1/4,1/8,x
($2_{\bar{x}z}|1/4,1/4,1/4$)

(25) $\bar{1}$ 3/8,3/8,3/8
($\bar{1}|3/4,3/4,3/4$)

(26) d (3/4,1/4,0) x,y,1/8
($m_z|3/4,1/4,1/4$)

(27) d (1/4,0,3/4) x,1/8,z
($m_y|1/4,1/4,3/4$)

(28) d (0,3/4,1/4) 1/8,y,z
($m_x|1/4,3/4,1/4$)

(29) $\bar{3}^+$ x,x,x;
3/8,3/8,3/8
($\bar{3}_{xyz}|3/4,3/4,3/4$)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$;
-3/8,3/8,5/8
($\bar{3}_{x\bar{y}z}^{-1}|1/4,3/4,1/4$)

(31) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$;
3/8,5/8,-3/8
($\bar{3}_{\bar{x}yz}^{-1}|3/4,1/4,1/4$)

(32) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x;
5/8,-3/8,3/8
($\bar{3}_{xy\bar{z}}^{-1}|1/4,1/4,3/4$)

(33) $\bar{3}^-$ x,x,x;
3/8,3/8,3/8
($\bar{3}_{xyz}^{-1}|3/4,3/4,3/4$)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1,$\bar{x}$;
-1/8,-3/8,5/8
($\bar{3}_{\bar{x}yz}|1/4,1/4,3/4$)

(35) $\bar{3}^-$ $\bar{x}$-1/2,$\bar{x}$+1/2, x;
-3/8,5/8,-1/8
($\bar{3}_{xy\bar{z}}|1/4,3/4,1/4$)

(36) $\bar{3}^-$ $\bar{x}$+1, x-1/2,$\bar{x}$;
5/8,-1/8,-3/8
($\bar{3}_{x\bar{y}z}|3/4,1/4,1/4$)

(37) g (-1/4,1/4,0) x+1/4,$\bar{x}$,z
($m_{xy}|0,1/2,0$)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}|1/2,1/2,1/2$)

(39) $\bar{4}^-$ 1/4,1/4,z; 1/4,1/4,0
($\bar{4}_z^{-1}|1/2,0,0$)

(40) $\bar{4}^+$ 0,0,z; 0,0,1/4
($\bar{4}_z|0,0,1/2$)

(41) $\bar{4}^-$ x,1/4,1/4; 0,1/4,1/4
($\bar{4}_x^{-1}|0,1/2,0$)

(42) g (0,-1/4,1/4) x,y+1/4,$\bar{y}$
($m_{yz}|0,0,1/2$)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}|1/2,1/2,1/2$)

(44) $\bar{4}^+$ x,0,0; 1/4,0,0
($\bar{4}_x|1/2,0,0$)

(45) $\bar{4}^+$ 0,y,0; 0,1/4,0
($\bar{4}_y|0,1/2,0$)

(46) g (1/4,0,-1/4) $\bar{x}$+1/4,y,x
($m_{xz}|1/2,0,0$)

(47) $\bar{4}^-$ 1/4,y,1/4; 1/4,0,1/4
($\bar{4}_y^{-1}|0,0,1/2$)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}|1/2,1/2,1/2$)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
($1|0,1/2,1/2$)

(2) 2 0,0,z
($2_z|0,0,0$)

(3) 2 1/4,y,1/4
($2_y|1/2,0,1/2$)

(4) 2 (1/2,0,0) x,1/4,0
($2_x|1/2,1/2,0$)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
($3_{xyz}|0,1/2,1/2$)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$

($3_{x\bar{y}z}^{-1}|1/2,1/2,0$)

(7) 3^+ x,$\bar{x}$,$\bar{x}$

($3_{\bar{x}yz}^{-1}|0,0,0$)

(8) 3^+ $\bar{x}$+1/2,$\bar{x}$+1/2,x

($3_{xy\bar{z}}^{-1}|1/2,0,1/2$)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
($3_{xyz}^{-1}|0,1/2,1/2$)

(10) 3^- x+1/2,$\bar{x}$,$\bar{x}$

($3_{\bar{x}yz}|1/2,0,1/2$)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}|1/2,1/2,0$)

(12) 3^- $\bar{x}$, x,$\bar{x}$

($3_{x\bar{y}z}|0,0,0$)

(13) 2 (3/4,3/4,0) x,x,1/8
(2_{xy}|3/4,3/4,1/4)

(14) 2 (-1/4,1/4,0) x,$\overline{x}$+1/2,3/8
($2_{\overline{x}y}$|1/4,3/4,3/4)

(15) 4^- (0,0,1/4) 1/4,0,z
(4_z^{-1}|1/4,1/4,1/4)

(16) 4^+ (0,0,3/4) 1/4,1/2,z
(4_z|3/4,1/4,3/4)

(17) 4^- (3/4,0,0) 1/2,-1/4
(4_x^{-1}|3/4,3/4,1/4)

(18) 2 (0,1/2,1/2) 3/8,y-1/4,y
(2_{yz}|3/4,1/4,3/4)

(19) 2 1/8,y+3/4,$\overline{y}$
($2_{\overline{y}z}$|1/4,3/4,3/4)

(20) 4^+ (1/4,0,0) x,0,1/4
(4_x|1/4,1/4,1/4)

(21) 4^+ (0,3/4,0) 1/2,y,-1/4
(4_y|3/4,3/4,1/4)

(22) 2 (1/4,0,1/4) x,1/8,x
(2_{xz}|1/4,1/4,1/4)

(23) 4^- (0,1/4,0) 0,y,3/4
(4_y^{-1}|3/4,1/4,3/4)

(24) 2 (-1/4,0,1/4)$\overline{x}$+1/2,3/8,x
($2_{\overline{x}z}$|1/4,3/4,3/4)

(25) $\overline{1}$ 3/8,1/8,1/8
($\overline{1}$|3/4,1/4,1/4)

(26) d (3/4,3/4,0) x,y,3/8
(m_z|3/4,3/4,3/4)

(27) d (1/4,0,1/4) x,3/8,z
(m_y|1/4,3/4,1/4)

(28) d (0,1/4,3/4) 1/8,y,z
(m_x|1/4,1/4,3/4)

(29) $\overline{3}^+$ x,x-1/2,x;
3/8,-1/8,3/8
($\overline{3}_{xyz}$|3/4,1/4,1/4)

(30) $\overline{3}^+$ $\overline{x}$-1,x+1/2,$\overline{x}$;
-3/8,-1/8,5/8
($\overline{3}_{x\overline{y}z}^{-1}$|1/4,1/4,3/4)

(31) $\overline{3}^+$ x,$\overline{x}$+3/2,$\overline{x}$;
3/8,9/8,-3/8
($\overline{3}_{\overline{x}yz}^{-1}$|3/4,3/4,3/4)

(32) $\overline{3}^+$ $\overline{x}$+1,$\overline{x}$+1/2,x;
5/8,1/8,3/8
($\overline{3}_{xy\overline{z}}^{-1}$|1/4,3/4,1/4)

(33) $\overline{3}^-$ x+1/2,x+1/2,x;
3/8,3/8,-1/8
($\overline{3}_{xyz}^{-1}$|3/4,1/4,1/4)

(34) $\overline{3}^-$ x+1,$\overline{x}$-1/2,$\overline{x}$;
3/8,1/8,5/8
($\overline{3}_{\overline{x}yz}$|1/4,3/4,1/4)

(35) $\overline{3}^-$ $\overline{x}$,$\overline{x}$+1, x;
-3/8,5/8,3/8
($\overline{3}_{xy\overline{z}}$|1/4,1/4,3/4)

(36) $\overline{3}^-$ $\overline{x}$+3/2, x,$\overline{x}$;
9/8,3/8,-3/8
($\overline{3}_{x\overline{y}z}$|3/4,3/4,3/4)

(37) c x,$\overline{x}$,z
(m_{xy}|0,0,1/2)

(38) g (1/4,1/4,0) x+1/4,x,z
($m_{\overline{x}y}$|1/2,0,0)

(39) $\overline{4}^-$ 0,1/2,z; 0,1/2,1/4
($\overline{4}_z^{-1}$|1/2,1/2,1/2)

(40) $\overline{4}^+$ 1/4,1/4,z; 1/4,1/4,0
($\overline{4}_z$|0,1/2,0)

(41) $\overline{4}^-$ x,-1/4,1/4; 0,-1/4,1/4
($\overline{4}_x^{-1}$|0,0,1/2)

(42) g (0,1/4,-1/4) x,y+1/4,$\overline{y}$
(m_{yz}|0,1/2,0)

(43) a x,y,y
($m_{\overline{y}z}$|1/2,0,0)

(44) $\overline{4}^+$ x,1/2,0; 1/4,1/2,0
($\overline{4}_x$|1/2,1/2,1/2)

(45) $\overline{4}^+$ -1/4,y,1/4; -1/4,0,1/4
($\overline{4}_y$|0,0,1/2)

(46) b $\overline{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(47) $\overline{4}^-$ 0,y,0; 0,1/4,0
($\overline{4}_y^{-1}$|0,1/2,0)

(48) g (1/4,0,1/4) x+1/4,y,x
($m_{\overline{x}z}$|1/2,0,0)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 1/4,1/4,z
(2_z|1/2,1/2,0)

(3) 2 (0,1/2,0) 0,y,1/4
(2_y|0,1/2,1/2)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ $\overline{x}$,x,$\overline{x}$

($3_{x\overline{y}z}^{-1}$|0,0,0)

(7) 3^+ x+1/2,$\overline{x}$,$\overline{x}$

($3_{\overline{x}yz}^{-1}$|1/2,1/2,0)

(8) 3^+ $\overline{x}$,$\overline{x}$+1/2,x

($3_{xy\overline{z}}^{-1}$|0,1/2,1/2)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\overline{x}$+1/6,$\overline{x}$
($3_{\overline{x}yz}$|0,1/2,1/2)

(11) 3^- $\overline{x}$,$\overline{x}$, x

($3_{xy\overline{z}}$|0,0,0)

(12) 3^- $\overline{x}$, x+1/2,$\overline{x}$

($3_{x\overline{y}z}$|1/2,1/2,0)

(13) 2 (1/4,1/4,0) x,x,1/8
(2_{xy}|1/4,1/4,1/4)

(14) 2 (1/4,-1/4,0) x,$\overline{x}$+1/2,3/8
($2_{\overline{x}y}$|3/4,1/4,3/4)

(15) 4^- (0,0,1/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,1/4)

(16) 4^+ (0,0,3/4) -1/4,1/2,z
(4_z|1/4,3/4,3/4)

(17) 4^- (1/4,0,0) x,1/4,0
(4_x^{-1}|1/4,1/4,1/4)

(18) 2 (0,3/4,3/4) 1/8,y,y
(2_{yz}|1/4,3/4,3/4)

(19) 2 (0,-1/4,1/4) 3/8,y+1/2,$\overline{y}$
($2_{\overline{y}z}$|3/4,1/4,3/4)

(20) 4^+ (3/4,0,0) x,1/4,1/2
(4_x|3/4,3/4,1/4)

(21) 4^+ (0,1/4,0) 1/4,y,0
(4_y|1/4,1/4,1/4)

(22) 2 (1/2,0,1/2) x+1/4,3/8,x
(2_{xz}|3/4,3/4,1/4)

(23) 4^- (0,3/4,0) -1/4,y,1/2
(4_y^{-1}|1/4,3/4,3/4)

(24) 2 $\overline{x}$+3/4,1/8,x
($2_{\overline{x}z}$|3/4,1/4,3/4)

(25) $\bar{1}$ 1/8,3/8,1/8
($\bar{1}$|1/4,3/4,1/4)

(26) d (1/4,1/4,0) x,y,3/8
(m_z|1/4,1/4,3/4)

(27) d (3/4,0,1/4) x,1/8,z
(m_y|3/4,1/4,1/4)

(28) d (0,3/4,3/4) 3/8,y,z
(m_x|3/4,3/4,3/4)

(29) $\bar{3}^+$ x+1/2,x+1/2,x;
3/8,3/8,-1/8
($\bar{3}_{xyz}$|1/4,3/4,1/4)

(30) $\bar{3}^+$ $\bar{x}$-3/2,x+3/2,$\bar{x}$;
-3/8,3/8,9/8
($\bar{3}_{x\bar{y}\bar{z}}^{-1}$|3/4,3/4,3/4)

(31) $\bar{3}^+$ x+1/2,$\bar{x}$+1/2,$\bar{x}$;
3/8,5/8,1/8
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,1/4,3/4)

(32) $\bar{3}^+$ $\bar{x}$+1/2,$\bar{x}$-1/2,x;
5/8,-3/8,-1/8
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,1/4,1/4)

(33) $\bar{3}^-$ x-1/2,x,x;
-1/8,3/8,3/8
($\bar{3}_{xyz}^{-1}$|1/4,3/4,1/4)

(34) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$;
3/8,-3/8,5/8
($\bar{3}_{\bar{x}yz}$|3/4,1/4,1/4)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+3/2, x;
-3/8,9/8,3/8
($\bar{3}_{xy\bar{z}}$|3/4,3/4,3/4)

(36) $\bar{3}^-$ $\bar{x}$+1/2, x+1/2,$\bar{x}$;
5/8,3/8,1/8
($\bar{3}_{x\bar{y}\bar{z}}$|1/4,1/4,3/4)

(37) c x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(38) g (1/4,1/4,0) x-1/4,x,z
($m_{\bar{x}y}$|0,1/2,0)

(39) $\bar{4}^-$ 0,0,z; 0,0,1/4
($\bar{4}_z^{-1}$|0,0,1/2)

40) $\bar{4}^+$ 1/4,-1/4,z; 1/4,-1/4,0
($\bar{4}_z$|1/2,0,0)

(41) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(42) a x,y,$\bar{y}$
(m_{yz}|1/2,0,0)

(43) g (0,1/4,1/4) x,y+1/4,y
($m_{\bar{y}z}$|0,1/2,0)

(44) $\bar{4}^+$ x,1/4,1/4; 0,1/4,1/4
($\bar{4}_x$|0,0,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

(46) g (-1/4,0,1/4) $\bar{x}$+1/4,y,x
(m_{xz}|0,0,1/2)

(47) $\bar{4}^-$ 1/4,y,-1/4; 1/4,0,-1/4
($\bar{4}_y^{-1}$|1/2,0,0)

(48) b x,y,x
($m_{\bar{x}z}$|0,1/2,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 1/4,0,z
(2_z|1/2,0,1/2)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,1/4,1/4
(2_x|0,1/2,1/2)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\bar{x}$,x+1/2,$\bar{x}$

($3_{x\bar{y}\bar{z}}^{-1}$|0,1/2,1/2)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$

($3_{\bar{x}yz}^{-1}$|1/2,0,1/2)

(8) 3^+ $\bar{x}$,$\bar{x}$,x

($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$

($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$+1/2,$\bar{x}$+1/2, x

($3_{xy\bar{z}}$|0,1/2,1/2)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,0,1/2)

(13) 2 (1/2,1/2,0) x,x+1/4,3/8
(2_{xy}|1/4,3/4,3/4)

(14) 2 x,$\bar{x}$+3/4,1/8
($2_{\bar{x}y}$|3/4,3/4,1/4)

(15) 4^- (0,0,3/4) 1/2,-1/4,z
(4_z^{-1}|3/4,1/4,3/4)

(16) 4^+ (0,0,1/4) 0,1/4,z
(4_z|1/4,1/4,1/4)

(17) 4^- (1/4,0,0) x,3/4,0
(4_x^{-1}|1/4,3/4,3/4)

(18) 2 (0,1/4,1/4) 1/8,y,y
(2_{yz}|1/4,1/4,1/4)

(19) 2 (0,1/4,-1/4) 3/8,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|3/4,3/4,1/4)

(20) 4^+ (3/4,0,0) x,-1/4,1/2
(4_x|3/4,1/4,3/4)

(21) 4^+ (0,3/4,0) 1/2,y,1/4
(4_y|1/4,3/4,3/4)

(22) 2 (3/4,0,3/4) x,1/8,x
(2_{xz}|3/4,1/4,3/4)

(23) 4^- (0,1/4,0) 0,y,1/4
(4_y^{-1}|1/4,1/4,1/4)

(24) 2 (1/4,0,-1/4) $\bar{x}$+1/2,3/8,x
($2_{\bar{x}z}$|3/4,3/4,1/4)

(25) $\bar{1}$ 1/8,1/8,3/8
($\bar{1}$|1/4,1/4,3/4)

(26) d (1/4,3/4,0) x,y,1/8
(m_z|1/4,3/4,1/4)

(27) d (3/4,0,3/4) x,3/8,z
(m_y|3/4,3/4,3/4)

(28) d (0,1/4,1/4) 3/8,y,z
(m_x|3/4,1/4,1/4)

(29) $\bar{3}^+$ x-1/2,x,x;
-1/8,3/8,3/8
($\bar{3}_{xyz}$|1/4,1/4,3/4)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1,$\bar{x}$;
1/8,3/8,5/8
($\bar{3}_{x\bar{y}\bar{z}}^{-1}$|3/4,1/4,1/4)

(31) $\bar{3}^+$ x-1/2,$\bar{x}$+1,$\bar{x}$;
-1/8,5/8,-3/8
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,3/4,1/4)

(32) $\bar{3}^+$ $\bar{x}$+3/2,$\bar{x}$,x;
9/8,-3/8,3/8
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,3/4,3/4)

(33) $\bar{3}^-$ x,x-1/2,x;
1/8,-1/8,3/8
($\bar{3}_{xyz}^{-1}$|1/4,1/4,3/4)

(34) $\bar{3}^-$ x+3/2,$\bar{x}$-3/2,$\bar{x}$;
3/8,-3/8,9/8
($\bar{3}_{\bar{x}yz}$|3/4,3/4,3/4)

(35) $\bar{3}^-$ $\bar{x}$+1/2,$\bar{x}$+1, x;
1/8,5/8,3/8
($\bar{3}_{xy\bar{z}}$|3/4,1/4,1/4)

(36) $\bar{3}^-$ $\bar{x}$+1, x,$\bar{x}$;
5/8,3/8,-3/8
($\bar{3}_{x\bar{y}\bar{z}}$|1/4,3/4,1/4)

(37) g (1/4,-1/4,0) x+1/4,$\bar{x}$,z
(m_{xy}|1/2,0,0)

(38) c x,x,z
($m_{\bar{x}\bar{y}}$|0,0,1/2)

(39) $\bar{4}^-$ -1/4,1/4,z; -1/4,1/4,0
($\bar{4}_z^{-1}$|0,1/2,0)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(41) $\bar{4}^-$ x,0,0; 1/4,0,0
($\bar{4}_x^{-1}$|1/2,0,0)

(42) a x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(43) g (0,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}$|0,0,1/2)

(44) $\bar{4}^+$ x,1/4,-1/4; 0,1/4,-1/4
($\bar{4}_x$|0,1/2,0)

(45) $\bar{4}^+$ 1/4,y,1/4; 1/4,0,1/4
($\bar{4}_y$|1/2,0,0)

(46) b $\bar{x}$,y,x
(m_{xz}|0,1/2,0)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(48) g (1/4,0,1/4) x-1/4,y,x
($m_{\bar{x}z}$|0,0,1/2)

228 Fd$\bar{3}$c ORIGIN CHOICE 2

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 (0,0,1/2) 1/8,3/8,z
(2_z|1/4,3/4,1/2)

(3) 2 (0,1/2,0) 3/8,y,1/8
(2_y|3/4,1/2,1/4)

(4) 2 (1/2,0,0) x,1/8,3/8
(2_x|1/2,1/4,3/4)

(5) 3^+ x,x,x

(3_{xyz}|0,0,0)

(6) 3^+ (1/3,-1/3,1/3)
$\bar{x}$+1/6,x+5/12,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/4,3/4)

(7) 3^+ (-1/3,1/3,1/3)
x+7/12,$\bar{x}$-1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/4,3/4,1/2)

(8) 3^+ (1/3,1/3,-1/3)
$\bar{x}$+5/12,$\bar{x}$+7/12,x
($3_{xy\bar{z}}^{-1}$|3/4,1/2,1/4)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x+1/4,$\bar{x}$+1/2,$\bar{x}$
($3_{\bar{x}yz}$|3/4,1/2,1/4)

(11) 3^- $\bar{x}$+3/4,$\bar{x}$+1/4, x
($3_{xy\bar{z}}$|1/2,1/4,3/4)

(12) 3^- $\bar{x}$-1/2, x+3/4,$\bar{x}$
($3_{x\bar{y}z}$|1/4,3/4,1/2)

(13) 2 (1/2,1/2,0) x,x-1/4,0
(2_{xy}|3/4,1/4,0)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,3/4) 1/8,-1/8,z
(4_z^{-1}|1/4,0,3/4)

(16) 4^+ (0,0,1/4) -3/8,3/8,z
(4_z|0,3/4,1/4)

(17) 4^- (3/4,0,0) x,1/8,-1/8
(4_x^{-1}|3/4,1/4,0)

(18) 2 (0,1/2,1/2) 0,y+1/4,y
(2_{yz}|0,3/4,1/4)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/4,0,0) x,-3/8,3/8
(4_x|1/4,0,3/4)

(21) 4^+ (0,1/4,0) 3/8,y,-3/8
(4_y|3/4,1/4,0)

(22) 2 (1/2,0,1/2) x-1/4,0,x
(2_{xz}|1/4,0,3/4)

(23) 4^- (0,3/4,0) -1/8,y,1/8
(4_y^{-1}|0,3/4,1/4)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) d (3/4,1/4,0) x,y,1/4
(m_z|3/4,1/4,1/2)

(27) d (1/4,0,3/4) x,1/4,z
(m_y|1/4,1/2,3/4)

(28) d (0,3/4,1/4) 1/4,y,z
(m_x|1/2,3/4,1/4)

(29) $\bar{3}^+$ x,x,x;
0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$-1,x+5/4,$\bar{x}$;
-1/4,1/2,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,3/4,1/4)

(31) $\bar{3}^+$ x+1/4,$\bar{x}$+1,$\bar{x}$;
1/2,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|3/4,1/4,1/2)

(32) $\bar{3}^+$ $\bar{x}$+5/4,$\bar{x}$+1/4,x;
3/4,-1/4,1/2
($\bar{3}_{xy\bar{z}}^{-1}$|1/4,1/2,3/4)

(33) $\bar{3}^-$ x,x,x;
0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x+3/4,$\bar{x}$-1,$\bar{x}$;
0,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|1/4,1/2,3/4)

(35) $\bar{3}^-$ $\bar{x}$-1/4,$\bar{x}$+3/4, x;
-14,3/4,0
($\bar{3}_{xy\bar{z}}$|1/2,3/4,1/4)

(36) $\bar{3}^-$ $\bar{x}$+1, x-1/4,$\bar{x}$;
3/4,0,-1/4
($\bar{3}_{x\bar{y}z}$|3/4,1/4,1/2)

(37) g (-1/4,1/4,1/2) x+1/2,$\bar{x}$,z
(m_{xy}|1/4,3/4,0)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}\bar{y}}$|1/2,1/2,1/2)

(39) $\bar{4}^-$ 3/8,3/8,z; 3/8,3/8,1/8
($\bar{4}_z^{-1}$|3/4,0,1/4)

(40) $\bar{4}^+$ 1/8,1/8,z; 1/8,1/8,3/8
($\bar{4}_z$|0,1/4,3/4)

(41) $\bar{4}^-$ x,3/8,3/8; 1/8,3/8,3/8
($\bar{4}_x^{-1}$|1/4,3/4,0)

(42) g (0,-1/4,1/4) x,y+1/2,$\bar{y}$
(m_{yz}|0,1/4,3/4)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(44) $\bar{4}^+$ x,1/8,1/8; 3/8,1/8,1/8
($\bar{4}_x$|3/4,0,1/4)

(45) $\bar{4}^+$ 1/8,y,1/8; 1/8,3/8,1/8
($\bar{4}_y$|1/4,3/4,0)

(46) g (1/4,0,-1/4) $\bar{x}$+1/2,y,x
(m_{xz}|3/4,0,1/4)

(47) $\bar{4}^-$ 3/8,y,3/8; 3/8,1/8,3/8
($\bar{4}_y^{-1}$|0,1/4,3/4)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

For (0,1/2,1/2) + set

(1) t (0,1/2,1/2)
(1|0,1/2,1/2)

(2) 2 1/8,1/8,z
(2_z|1/4,1/4,0)

(3) 2 3/8,y,3/8
(2_y|3/4,0,3/4)

(4) 2 (1/2,0,0) x,3/8,1/8
(2_x|1/2,3/4,1/4)

(5) 3^+ (1/3,1/3,1/3)
x-1/3,x-1/6,x
(3_{xyz}|0,1/2,1/2)

(6) 3^+ $\overline{x}$+1/2,x+1/4,$\overline{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|1/2,3/4,1/4)

(7) 3^+ x+1/4,$\overline{x}$,$\overline{x}$
($3_{\bar{x}yz}^{-1}$|1/4,1/4,0)

(8) 3^+ $\overline{x}$+3/4,$\overline{x}$+3/4,x
($3_{xy\bar{z}}^{-1}$|3/4,0,3/4)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x+1/6,x
(3_{xyz}^{-1}|0,1/2,1/2)

(10) 3^- x+3/4,$\overline{x}$,$\overline{x}$
($3_{\bar{x}yz}$|3/4,0,3/4)

(11) 3^- (1/3,1/3,-1/3)
$\overline{x}$+7/12,$\overline{x}$+5/12, x
($3_{xy\bar{z}}$|1/2,3/4,1/4)

(12) 3^- $\overline{x}$, x+1/4,$\overline{x}$
($3_{x\bar{y}z}$|1/4,1/4,0)

(13) 2 (3/4,3/4,0) x,x,1/4
(2_{xy}|3/4,3/4,1/2)

(14) 2 (1/4,-1/4,0) x,$\overline{x}$+1/4,0
($2_{\bar{x}y}$|1/2,0,0)

(15) 4^- (0,0,1/4) 3/8,1/8,z
(4_z^{-1}|1/4,1/2,1/4)

(16) 4^+ (0,0,3/4) -1/8,1/8,z
(4_z|0,1/4,3/4)

(17) 4^- (3/4,0,0) 5/8,-1/8
(4_x^{-1}|3/4,3/4,1/2)

(18) 2 (0,1/2,1/2) 0,y-1/4,y
(2_{yz}|0,1/4,3/4)

(19) 2 1/4,y,$\overline{y}$
($2_{\bar{y}z}$|1/2,0,0)

(20) 4^+ (1/4,0,0) x,1/8,3/8
(4_x|1/4,1/2,1/4)

(21) 4^+ (0,3/4,0) 5/8,y,-1/8
(4_y|3/4,3/4,1/2)

(22) 2 (1/4,0,1/4) x,1/4,x
(2_{xz}|1/4,1/2,1/4)

(23) 4^- (0,1/4,0) -3/8,y,3/8
(4_y^{-1}|0,1/4,3/4)

(24) 2 (1/4,0,-1/4)$\overline{x}$+1/4,0,x
($2_{\bar{x}z}$|1/2,0,0)

(25) $\overline{1}$ 0,1/4,1/4
($\overline{1}$|0,1/2,1/2)

(26) d (3/4,3/4,0) x,y,0
(m_z|3/4,3/4,0)

(27) d (1/4,0,1/4) x,0,z
(m_y|1/4,0,1/4)

(28) d (0,1/4,3/4) 1/4,y,z
(m_x|1/2,1/4,3/4)

(29) $\overline{3}^+$ x,x+1/2,x;
0,1/2,0
($\overline{3}_{xyz}$|0,1/2,1/2)

(30) $\overline{3}^+$ $\overline{x}$-1,x+3/4,$\overline{x}$;
-1/4,0,3/4
($\overline{3}_{x\bar{y}z}^{-1}$|1/2,1/4,3/4)

(31) $\overline{3}^+$ x-3/4,$\overline{x}$+3/2,$\overline{x}$;
0,3/4,-3/4
($\overline{3}_{\bar{x}yz}^{-1}$|3/4,3/4,0)

(32) $\overline{3}^+$ $\overline{x}$+1/4,$\overline{x}$-1/4,x;
1/4,-1/4,0
($\overline{3}_{xy\bar{z}}^{-1}$|1/4,0,1/4)

(33) $\overline{3}^-$ x-1/2,x-1/2,x;
0,0,1/2
($\overline{3}_{xyz}^{-1}$|0,1/2,1/2)

(34) $\overline{3}^-$ x+1/4,$\overline{x}$-1/2,$\overline{x}$;
0,-1/4,1/4
($\overline{3}_{\bar{x}yz}$|1/4,0,1/4)

(35) $\overline{3}^-$ $\overline{x}$+1/4,$\overline{x}$+5/4, x;
-1/4,3/4,1/2
($\overline{3}_{xy\bar{z}}$|1/2,1/4,3/4)

(36) $\overline{3}^-$ $\overline{x}$+3/2, x-3/4,$\overline{x}$;
3/4,0,-3/4
($\overline{3}_{x\bar{y}z}$|3/4,3/4,0)

(37) c x+1/4,$\overline{x}$,z
(m_{xy}|1/4,1/4,1/2)

(38) g (1/4,1/4,0) x+1/4,x,z
($m_{\bar{x}y}$|1/2,0,0)

(39) $\overline{4}^-$ 1/8,5/8,z; 1/8,5/8,3/8
($\overline{4}_z^{-1}$|3/4,1/2,3/4)

(40) $\overline{4}^+$ 3/8,3/8,z; 3/8,3/8,1/8
($\overline{4}_z$|0,3/4,1/4)

(41) $\overline{4}^-$ x,-1/8,3/8; 1/8,-1/8,3/8
($\overline{4}_x^{-1}$|1/4,1/4,1/2)

(42) g (0,1/4,-1/4) x,y+1/2,$\overline{y}$
(m_{yz}|0,3/4,1/4)

(43) a x,y,y
($m_{\bar{y}z}$|1/2,0,0)

(44) $\overline{4}^+$ x,5/8,1/8; 3/8,5/8,1/8
($\overline{4}_x$|3/4,0,3/4)

(45) $\overline{4}^+$ -1/8,y,3/8; -1/8,1/8,3/8
($\overline{4}_y$|1/4,1/4,1/2)

(46) b $\overline{x}$+3/4,y,x
(m_{xz}|3/4,1/2,3/4)

(47) $\overline{4}^-$ 1/8,y,1/8; 1/8,3/8,1/8
($\overline{4}_y^{-1}$|0,3/4,1/4)

(48) g (1/4,0,1/4) x+1/4,y,x
($m_{\bar{x}z}$|1/2,0,0)

For (1/2,0,1/2) + set

(1) t (1/2,0,1/2)
(1|1/2,0,1/2)

(2) 2 3/8,3/8,z
(2_z|3/4,3/4,0)

(3) 2 (0,1/2,0) 1/8,y,3/8
(2_y|1/4,1/2,3/4)

(4) 2 x,1/8,1/8
(2_x|0,1/4,1/4)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x-1/6,x
(3_{xyz}|1/2,0,1/2)

(6) 3^+ $\overline{x}$,x+1/4,$\overline{x}$
($3_{x\bar{y}\bar{z}}^{-1}$|0,1/4,1/4)

(7) 3^+ x+3/4,$\overline{x}$,$\overline{x}$
($3_{\bar{x}yz}^{-1}$|3/4,3/4,0)

(8) 3^+ $\overline{x}$+1/4,$\overline{x}$+3/4,x
($3_{xy\bar{z}}^{-1}$|1/4,1/2,3/4)

(9) 3^- (1/3,1/3,1/3)
x-1/6,x-1/3,x
(3_{xyz}^{-1}|1/2,0,1/2)

(10) 3^- (-1/3,1/3,1/3)
x+5/12,$\overline{x}$+1/6,$\overline{x}$
($3_{\bar{x}yz}$|1/4,1/2,3/4)

(11) 3^- $\overline{x}$+1/4,$\overline{x}$+1/4, x
($3_{xy\bar{z}}$|0,1/4,1/4)

(12) 3^- $\overline{x}$, x+3/4,$\overline{x}$
($3_{x\bar{y}z}$|3/4,3/4,0)

(13) 2 (1/4,1/4,0) x,x,1/4
(2_{xy}|1/4,1/4,1/2)

(14) 2 (-1/4,1/4,0) x,$\overline{x}$+1/4,0
($2_{\overline{x}y}$|0,1/2,0)

(15) 4^- (0,0,1/4) 3/8,-3/8,z
(4_z^{-1}|3/4,0,1/4)

(16) 4^+ (0,0,3/4) -1/8,5/8,z
(4_z|1/2,3/4,3/4)

(17) 4^- (1/4,0,0) x,3/8,1/8
(4_x^{-1}|1/4,1/4,1/2)

(18) 2 (0,3/4,3/4) 1/4,y,y
(2_{yz}|1/2,3/4,3/4)

(19) 2 (0,1/4,-1/4) 0,y+1/4,$\overline{y}$
($2_{\overline{y}z}$|0,1/2,0)

(20) 4^+ (3/4,0,0) x,-1/8,1/8
(4_x|3/4,0,1/4)

(21) 4^+ (0,1/4,0) 3/8,y,1/8
(4_y|1/4,1/4,1/2)

(22) 2 (1/2,0,1/2) x+1/4,0,x
(2_{xz}|3/4,0,1/4)

(23) 4^- (0,3/4,0) -1/8,y,5/8
(4_y^{-1}|1/2,3/4,3/4)

(24) 2 $\overline{x}$,1/4,x
($2_{\overline{x}z}$|0,1/2,0)

(25) $\overline{1}$ 1/4,0,1/4
($\overline{1}$|1/2,0,1/2)

(26) d (1/4,1/4,0) x,y,0
(m_z|1/4,1/4,0)

(27) d (3/4,0,1/4) x,1/4,z
(m_y|3/4,1/2,1/4)

(28) d (0,3/4,3/4) 0,y,z
(m_x|0,3/4,3/4)

(29) $\overline{3}^+$ x-1/2,x-1/2,x;
0,0,1/2
($\overline{3}_{xyz}$|1/2,0,1/2)

(30) $\overline{3}^+$ $\overline{x}$-3/2,x+3/4,$\overline{x}$;
-3/4,0,3/4
($\overline{3}_{x\overline{y}z}^{-1}$|0,3/4,3/4)

(31) $\overline{3}^+$ x-1/4,$\overline{x}$+1/2,$\overline{x}$;
0,1/4,-1/4
($\overline{3}_{\overline{x}yz}^{-1}$|1/4,1/4,0)

(32) $\overline{3}^+$ $\overline{x}$+3/4,$\overline{x}$-1/4,x;
3/4,-1/4,0
($\overline{3}_{xy\overline{z}}^{-1}$|3/4,1/2,1/4)

(33) $\overline{3}^-$ x+1/2,x,x;
1/2,0,0
($\overline{3}_{xyz}^{-1}$|1/2,0,1/2)

(34) $\overline{3}^-$ x+5/4,$\overline{x}$-1,$\overline{x}$;
1/2,-1/4,3/4
($\overline{3}_{\overline{x}yz}$|3/4,1/2,1/4)

(35) $\overline{3}^-$ $\overline{x}$-3/4,$\overline{x}$+3/4, x;
-3/4,3/4,0
($\overline{3}_{xy\overline{z}}$|0,3/4,3/4)

(36) $\overline{3}^-$ $\overline{x}$+1/2, x-1/4,$\overline{x}$;
1/4,0,-1/4
($\overline{3}_{x\overline{y}z}$|1/4,1/4,0)

(37) c x+3/4,$\overline{x}$,z
(m_{xy}|3/4,3/4,1/2)

(38) g (1/4,1/4,0) x-1/4,x,z
($m_{\overline{x}y}$|0,1/2,0)

(39) $\overline{4}^-$ 1/8,1/8,z; 1/8,1/8,3/8
($\overline{4}_z^{-1}$|1/4,0,3/4)

(40) $\overline{4}^+$ 3/8,-1/8,z; 3/8,-1/8,1/8
($\overline{4}_z$|1/2,1/4,1/4)

(41) $\overline{4}^-$ x,1/8,5/8; 3/8,1/8,5/8
($\overline{4}_x^{-1}$|3/4,3/4,1/2)

(42) a x,y+1/4,$\overline{y}$
(m_{yz}|1/2,1/4,1/4)

(43) g (0,1/4,1/4) x,y+1/4,y
($m_{\overline{y}z}$|0,1/2,0)

(44) $\overline{4}^+$ x,3/8,3/8; 1/8,3/8,3/8
($\overline{4}_x$|1/4,0,3/4)

(45) $\overline{4}^+$ 1/8,y,5/8; 1/8,3/8,5/8
($\overline{4}_y$|3/4,3/4,1/2)

(46) g (-1/4,0,1/4) $\overline{x}$+1/2,y,x
(m_{xz}|1/4,0,3/4)

(47) $\overline{4}^-$ 3/8,y,-1/8; 3/8,1/8,-1/8
($\overline{4}_y^{-1}$|1/2,1/4,1/4)

(48) b x,y,x
($m_{\overline{x}z}$|0,1/2,0)

For (1/2,1/2,0) + set

(1) t (1/2,1/2,0)
(1|1/2,1/2,0)

(2) 2 (0,0,1/2) 3/8,1/8,z
(2_z|3/4,1/4,1/2)

(3) 2 1/8,y,1/8
(2_y|1/4,0,1/4)

(4) 2 x,3/8,3/8
(2_x|0,3/4,3/4)

(5) 3^+ (1/3,1/3,1/3)
x+1/6,x+1/3,x
(3_{xyz}|1/2,1/2,0)

(6) 3^+ $\overline{x}$,x+3/4,$\overline{x}$

($3_{x\overline{y}z}^{-1}$|0,3/4,3/4)

(7) 3^+ x+3/4,$\overline{x}$-1/2,$\overline{x}$

($3_{\overline{x}yz}^{-1}$|3/4,1/4,1/2)

(8) 3^+ $\overline{x}$+1/4,$\overline{x}$+1/4,x

($3_{xy\overline{z}}^{-1}$|1/4,0,1/4)

(9) 3^- (1/3,1/3,1/3)
x+1/3,x+1/6,x
(3_{xyz}^{-1}|1/2,1/2,0)

(10) 3^- x+1/4,$\overline{x}$,$\overline{x}$

($3_{\overline{x}yz}$|1/4,0,1/4)

(11) 3^- $\overline{x}$+3/4,$\overline{x}$+3/4, x

($3_{xy\overline{z}}$|0,3/4,3/4)

(12) 3^- (1/3,-1/3,1/3)
$\overline{x}$-1/6, x+7/12,$\overline{x}$
($3_{\overline{x}\overline{y}z}$|3/4,1/4,1/2)

(13) 2 (1/2,1/2,0) x,x+1/4,0
(2_{xy}|1/4,3/4,0)

(14) 2 x,$\overline{x}$,1/4
($2_{\overline{x}y}$|0,0,1/2)

(15) 4^- (0,0,3/4) 5/8,-1/8,z
(4_z^{-1}|3/4,1/2,3/4)

(16) 4^+ (0,0,1/4) 1/8,3/8,z
(4_z|1/2,1/4,1/4)

(17) 4^- (1/4,0,0) x,3/8,-3/8
(4_x^{-1}|1/4,3/4,0)

(18) 2 (0,1/4,1/4) 1/4,y,y
(2_{yz}|1/2,1/4,1/4)

(19) 2 (0,-1/4,1/4) 0,y+1/4,$\overline{y}$
($2_{\overline{y}z}$|0,0,1/2)

(20) 4^+ (3/4,0,0) x,-1/8,5/8
(4_x|3/4,1/2,3/4)

(21) 4^+ (0,3/4,0) 1/8,y,-1/8
(4_y|1/4,3/4,0)

(22) 2 (3/4,0,3/4) x,1/4,x
(2_{xz}|3/4,1/2,3/4)

(23) 4^- (0,1/4,0) 1/8,y,3/8
(4_y^{-1}|1/2,1/4,1/4)

(24) 2 (-1/4,0,1/4) $\overline{x}$+1/4,0,x
($2_{\overline{x}z}$|0,0,1/2)

(25) $\bar{1}$ 1/4,1/4,0
($\bar{1}$|1/2,1/2,0)

(26) d (1/4,3/4,0) x,y,1/4
(m_z|1/4,3/4,1/2)

(27) d (3/4,0,3/4) x,0,z
(m_y|3/4,0,3/4)

(28) d (0,1/4,1/4) 0,y,z
(m_x|0,1/4,1/4)

(29) $\bar{3}^+$ x+1/2,x,x; 1/2,0,0
($\bar{3}_{xyz}$|1/2,1/2,0)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1/4,$\bar{x}$; -1/4,0,1/4
($\bar{3}_{x\bar{y}z}^{-1}$|0,1/4,1/4)

(31) $\bar{3}^+$ x-1/4,$\bar{x}$+1,$\bar{x}$; 0,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/4,3/4,1/2)

(32) $\bar{3}^+$ $\bar{x}$+3/4,$\bar{x}$-3/4,x; 3/4,-3/4,0
($\bar{3}_{xy\bar{z}}^{-1}$|3/4,0,3/4)

(33) $\bar{3}^-$ x,x+1/2,x; 0,1/2,0
($\bar{3}_{xyz}^{-1}$|1/2,1/2,0)

(34) $\bar{3}^-$ x+3/4,$\bar{x}$-3/2,$\bar{x}$; 0,-3/4,3/4
($\bar{3}_{\bar{x}yz}$|3/4,0,3/4)

(35) $\bar{3}^-$ $\bar{x}$-1/4,$\bar{x}$+1/4, x; -1/4,1/4,0
($\bar{3}_{xy\bar{z}}$|0,1/4,1/4)

(36) $\bar{3}^-$ $\bar{x}$+1, x+1/4,$\bar{x}$; 3/4,1/2,-1/4
($\bar{3}_{x\bar{y}z}$|1/4,3/4,1/2)

(37) g (1/4,-1/4,0) x+1/2,$\bar{x}$,z
(m_{xy}|3/4,1/4,0)

(38) c x,x,z
($m_{\bar{x}y}$|0,0,1/2)

(39) $\bar{4}^-$ -1/8,3/8,z; -1/8,3/8,1/8
($\bar{4}_z^{-1}$|1/4,1/2,1/4)

(40) $\bar{4}^+$ 5/8,1/8,z; 5/8,1/8,3/8
($\bar{4}_z$|1/2,3/4,3/4)

(41) $\bar{4}^-$ x,1/8,1/8; 3/8,1/8,1/8
($\bar{4}_x^{-1}$|3/4,1/4,0)

(42) a x,y+3/4,$\bar{y}$
(m_{yz}|1/2,3/4,3/4)

(43) g (0,1/4,1/4) x,y-1/4,y
($m_{\bar{y}z}$|0,0,1/2)

(44) $\bar{4}^+$ x,3/8,-1/8; 1/8,3/8,-1/8
($\bar{4}_x$|1/4,1/2,1/4)

(45) $\bar{4}^+$ 3/8,y,3/8; 3/8,1/8,3/8
($\bar{4}_y$|3/4,1/4,0)

(46) b $\bar{x}$+1/4,y,x
(m_{xz}|1/4,1/2,1/4)

(47) $\bar{4}^-$ 5/8,y,1/8; 5/8,3/8,1/8
($\bar{4}_y^{-1}$|1/2,3/4,3/4)

(48) g (1/4,0,1/4) x-1/4,y,x
($m_{\bar{x}z}$|0,0,1/2)

229 Im$\bar{3}$m

For (0,0,0) + set

(1) 1
(1|0,0,0)

(2) 2 0,0,z
(2_z|0,0,0)

(3) 2 0,y,0
(2_y|0,0,0)

(4) 2 x,0,0
(2_x|0,0,0)

(5) 3^+ x,x,x
(3_{xyz}|0,0,0)

(6) 3^+ $\bar{x}$,x,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|0,0,0)

(7) 3^+ x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|0,0,0)

(8) 3^+ $\bar{x}$,$\bar{x}$,x
($3_{xy\bar{z}}^{-1}$|0,0,0)

(9) 3^- x,x,x
(3_{xyz}^{-1}|0,0,0)

(10) 3^- x,$\bar{x}$,$\bar{x}$
($3_{\bar{x}yz}$|0,0,0)

(11) 3^- $\bar{x}$,$\bar{x}$, x
($3_{xy\bar{z}}$|0,0,0)

(12) 3^- $\bar{x}$, x,$\bar{x}$
($3_{x\bar{y}z}$|0,0,0)

(13) 2 x,x,0
(2_{xy}|0,0,0)

(14) 2 x,$\bar{x}$,0
($2_{\bar{x}y}$|0,0,0)

(15) 4^- 0,0,z
(4_z^{-1}|0,0,0)

(16) 4^+ 0,0,z
(4_z|0,0,0)

(17) 4^- x,0,0
(4_x^{-1}|0,0,0)

(18) 2 0,y,y
(2_{yz}|0,0,0)

(19) 2 0,y,$\bar{y}$
($2_{\bar{y}z}$|0,0,0)

(20) 4^+ x,0,0
(4_x|0,0,0)

(21) 4^+ 0,y,0
(4_y|0,0,0)

(22) 2 x,0,x
(2_{xz}|0,0,0)

(23) 4^- 0,y,0
(4_y^{-1}|0,0,0)

(24) 2 $\bar{x}$,0,x
($2_{\bar{x}z}$|0,0,0)

(25) $\bar{1}$ 0,0,0
($\bar{1}$|0,0,0)

(26) m x,y,0
(m_z|0,0,0)

(27) m x,0,z
(m_y|0,0,0)

(28) m 0,y,z
(m_x|0,0,0)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}$|0,0,0)

(30) $\bar{3}^+$ $\bar{x}$,x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,0)

(31) $\bar{3}^+$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}^{-1}$|0,0,0)

(32) $\bar{3}^+$ $\bar{x}$,$\bar{x}$,x; 0,0,0
($\bar{3}_{xy\bar{z}}^{-1}$|0,0,0)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}$|0,0,0)

(34) $\bar{3}^-$ x,$\bar{x}$,$\bar{x}$; 0,0,0
($\bar{3}_{\bar{x}yz}$|0,0,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$, x; 0,0,0
($\bar{3}_{xy\bar{z}}$|0,0,0)

(36) $\bar{3}^-$ $\bar{x}$, x,$\bar{x}$; 0,0,0
($\bar{3}_{x\bar{y}z}$|0,0,0)

(37) m x,$\bar{x}$,z
(m_{xy}|0,0,0)

(38) m x,x,z
($m_{\bar{x}y}$|0,0,0)

(39) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^{-1}$|0,0,0)

(40) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z$|0,0,0)

(41) $\bar{4}^-$ x,0,0; 0,0,0
($\bar{4}_x^{-1}$|0,0,0)

(42) m x,y,$\bar{y}$
(m_{yz}|0,0,0)

(43) m x,y,y
($m_{\bar{y}z}$|0,0,0)

(44) $\bar{4}^+$ x,0,0; 0,0,0
($\bar{4}_x$|0,0,0)

(45) $\bar{4}^+$ 0,y,0; 0,0,0
($\bar{4}_y$|0,0,0)

(46) m $\bar{x}$,y,x
(m_{xz}|0,0,0)

(47) $\bar{4}^-$ 0,y,0; 0,0,0
($\bar{4}_y^{-1}$|0,0,0)

(48) m x,y,x
($m_{\bar{x}z}$|0,0,0)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
(1|1/2,1/2,1/2)

(2) 2 (0,0,1/2) 1/4,1/4,z
(2_z|1/2,1/2,1/2)

(3) 2 (0,1/2,0) 1/4,y,1/4
(2_y|1/2,1/2,1/2)

(4) 2 (1/2,0,0) x,1/4,1/4
(2_x|1/2,1/2,1/2)

(5) 3^+ (1/2,1/2,1/2) x,x,x

(3_{xyz}|1/2,1/2,1/2)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$+1/3,x+1/3,$\bar{x}$
($3_{x\bar{y}z}^{-1}$|1/2,1/2,1/2)

(7) 3^+ (-1/6,1/6,1/6)
x+2/3,$\bar{x}$-1/3,$\bar{x}$
($3_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+2/3,x
($3_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(9) 3^- (1/2,1/2,1/2) x,x,x

(3_{xyz}^{-1}|1/2,1/2,1/2)

(10) 3^- (-1/6,1/6,1/6)
x+1/3,$\bar{x}$+1/3,$\bar{x}$
($3_{\bar{x}yz}$|1/2,1/2,1/2)

(11) 3^- (1/6,1/6,-1/6)
$\bar{x}$+2/3,$\bar{x}$+1/3, x
($3_{xy\bar{z}}$|1/2,1/2,1/2)

(12) 3^- (1/6,-1/6,1/6)
$\bar{x}$-1/3, x+2/3,$\bar{x}$
($3_{x\bar{y}z}$|1/2,1/2,1/2)

(13) 2 (1/2,1/2,0) x,x,1/4
(2_{xy}|1/2,1/2,1/2)

(14) 2 x,$\bar{x}$+1/2,1/4
($2_{\bar{x}y}$|1/2,1/2,1/2)

(15) 4^- (0,0,1/2) 1/2,0,z
(4_z^{-1}|1/2,1/2,1/2)

(16) 4^+ (0,0,1/2) 0,1/2,z
(4_z|1/2,1/2,1/2)

(17) 4^- (1/2,0,0) x,1/2,0
(4_x^{-1}|1/2,1/2,1/2)

(18) 2 (0,1/2,1/2) 1/4,y,y
(2_{yz}|1/2,1/2,1/2)

(19) 2 1/4,y+1/2,$\bar{y}$
($2_{\bar{y}z}$|1/2,1/2,1/2)

(20) 4^+ (1/2,0,0) x,0,1/2
(4_x|1/2,1/2,1/2)

(21) 4^+ (0,1/2,0) 1/2,y,0
(4_y|1/2,1/2,1/2)

(22) 2 (1/2,0,1/2) x,1/4,x
(2_{xz}|1/2,1/2,1/2)

(23) 4^- (0,1/2,0) 0,y,1/2
(4_y^{-1}|1/2,1/2,1/2)

(24) 2 $\bar{x}$+1/2,1/4,x
($2_{\bar{x}z}$|1/2,1/2,1/2)

(25) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(26) n (1/2,1/2,0) x,y,1/4
(m_z|1/2,1/2,1/2)

(27) n (1/2,0,1/2) x,1/4,z
(m_y|1/2,1/2,1/2)

(28) n (0,1/2,1/2) 1/4,y,z
(m_x|1/2,1/2,1/2)

(29) $\bar{3}^+$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}$|1/2,1/2,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1,x+1,$\bar{x}$;
-1/4,1/4,3/4
($\bar{3}_{x\bar{y}z}^{-1}$|1/2,1/2,1/2)

(31) $\bar{3}^+$ x,$\bar{x}$+1,$\bar{x}$;
1/4,3/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|1/2,1/2,1/2)

(32) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$,x;
3/4,-1/4,1/4
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,1/2,1/2)

(33) $\bar{3}^-$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}^{-1}$|1/2,1/2,1/2)

(34) $\bar{3}^-$ x+1,$\bar{x}$-1,$\bar{x}$;
1/4,-1/4,3/4
($\bar{3}_{\bar{x}yz}$|1/2,1/2,1/2)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1, x;
-1/4,3/4,1/4
($\bar{3}_{xy\bar{z}}$|1/2,1/2,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1, x,$\bar{x}$;
3/4,1/4,-1/4
($\bar{3}_{x\bar{y}z}$|1/2,1/2,1/2)

(37) c (0,0,1/2) x+1/2,$\bar{x}$,z
(m_{xy}|1/2,1/2,1/2)

(38) n (1/2,1/2,1/2) x,x,z
($m_{\bar{x}y}$|1/2,1/2,1/2)

(39) $\bar{4}^-$ 0,1/2,z; 0,1/2,1/4
($\bar{4}_z^{-1}$|1/2,1/2,1/2)

(40) $\bar{4}^+$ 1/2,0,z; 1/2,0,1/4
($\bar{4}_z$|1/2,1/2,1/2)

(41) $\bar{4}^-$ x,0,1/2; 1/4,0,1/2
($\bar{4}_x^{-1}$|1/2,1/2,1/2)

(42) a (1/2,0,0) x,y+1/2,$\bar{y}$
(m_{yz}|1/2,1/2,1/2)

(43) n (1/2,1/2,1/2) x,y,y
($m_{\bar{y}z}$|1/2,1/2,1/2)

(44) $\bar{4}^+$ x,1/2,0; 1/4,1/2,0
($\bar{4}_x$|1/2,1/2,1/2)

(45) $\bar{4}^+$ 0,y,1/2; 0,1/4,1/2
($\bar{4}_y$|1/2,1/2,1/2)

(46) b (0,1/2,0) $\bar{x}$+1/2,y,x
(m_{xz}|1/2,1/2,1/2)

(47) $\bar{4}^-$ 1/2,y,0; 1/2,1/4,0
($\bar{4}_y^{-1}$|1/2,1/2,1/2)

(48) n (1/2,1/2,1/2) x,y,x
($m_{\bar{x}z}$|1/2,1/2,1/2)

230 $Ia\bar{3}d$

For (0,0,0) + set

(1) 1
($1|0,0,0$)

(2) 2 (0,0,1/2) 1/4,0,z
($2_z|1/2,0,1/2$)

(3) 2 (0,1/2,0) 0,y,1/4
($2_y|0,1/2,1/2$)

(4) 2 (1/2,0,0) x,1/4,0
($2_x|1/2,1/2,2/0$)

(5) 3^+ x,x,x
($3_{xyz}|0,0,0$)

(6) 3^+ $\bar{x}$+1/2,x,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}|1/2,1/2,0$)

(7) 3^+ x+1/2,$\bar{x}$-1/2,$\bar{x}$
($3_{\bar{x}yz}^{-1}|1/2,0,1/2$)

(8) 3^+ $\bar{x}$,$\bar{x}$+1/2,x
($3_{xy\bar{z}}^{-1}|0,1/2,1/2$)

(9) 3^- x,x,x
($3_{xyz}^{-1}|0,0,0$)

(10) 3^- (-1/3,1/3,1/3)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}|0,1/2,1/2$)

(11) 3^- (1/3,1/3,-1/3)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}|1/2,1/2,0$)

(12) 3^- (1/3,-1/3,1/3)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}|1/2,0,1/2$)

(13) 2 (1/2,1/2,0) x,x-1/4,1/8
($2_{xy}|3/4,1/4,1/4$)

(14) 2 x,$\bar{x}$+3/4,3/8
($2_{\bar{x}y}|3/4,3/4,3/4$)

(15) 4^- (0,0,3/4) 1/4,0,z
($4_z^{-1}|1/4,1/4,3/4$)

(16) 4^+ (0,0,1/4) -1/4,1/2,z
($4_z|1/4,3/4,1/4$)

(17) 4^- (3/4,0,0) x,1/4,0
($4_x^{-1}|3/4,1/4,1/4$)

(18) 2 (0,1/2,1/2) 1/8,y+1/4,y
($2_{yz}|1/4,3/4,1/4$)

(19) 2 3/8,y+3/4,$\bar{y}$
($2_{\bar{y}z}|3/4,3/4,3/4$)

(20) 4^+ (1/4,0,0) x,-1/4,1/2
($4_x|1/4,1/4,3/4$)

(21) 4^+ (0,1/4,0) 1/2,y,-1/4
($4_y|3/4,1/4,1/4$)

(22) 2 (1/2,0,1/2) x-1/4,1/8,x
($2_{xz}|1/4,1/4,3/4$)

(23) 4^- (0,3/4,0) 0,y,1/4
($4_y^{-1}|1/4,3/4,1/4$)

(24) 2 $\bar{x}$+3/4,3/8,x
($2_{\bar{x}z}|3/4,3/4,3/4$)

(25) $\bar{1}$ 0,0,0
($\bar{1}|0,0,0$)

(26) a (1/2,0,0) x,y,1/4
($m_z|1/2,0,1/2$)

(27) c (0,0,1/2) x,1/4,z
($m_y|0,1/2,1/2$)

(28) b (0,1/2,0) 1/4,y,z
($m_x|1/2,1/2,0$)

(29) $\bar{3}^+$ x,x,x; 0,0,0
($\bar{3}_{xyz}|0,0,0$)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x+1,$\bar{x}$;
0,1/2,1/2
($\bar{3}_{x\bar{y}\bar{z}}^{-1}|1/2,1/2,0$)

(31) $\bar{3}^+$ x+1/2,$\bar{x}$+1/2,$\bar{x}$;
1/2,1/2,0
($\bar{3}_{\bar{x}yz}^{-1}|1/2,0,1/2$)

(32) $\bar{3}^+$ $\bar{x}$+1,$\bar{x}$+1/2,x;
1/2,0,1/2
($\bar{3}_{xy\bar{z}}^{-1}|0,1/2,1/2$)

(33) $\bar{3}^-$ x,x,x; 0,0,0
($\bar{3}_{xyz}^{-1}|0,0,0$)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$; 0,0,1/2
($\bar{3}_{\bar{x}yz}|0,1/2,1/2$)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2, x; 0,1/2,0
($\bar{3}_{xy\bar{z}}|1/2,1/2,0$)

(36) $\bar{3}^-$ $\bar{x}$+1/2, x,$\bar{x}$; 1/2,0,0
($\bar{3}_{x\bar{y}z}|1/2,0,1/2$)

(37) d (-1/4,1/4,1/4) x+1/2,$\bar{x}$,z
($m_{xy}|1/4,3/4,3/4$)

(38) d (1/4,1/4,1/4) x,x,z
($m_{\bar{x}y}|1/4,1/4,1/4$)

(39) $\bar{4}^-$ 0,3/4,z; 0,3/4,1/8
($\bar{4}_z^{-1}|3/4,3/4,1/4$)

(40) $\bar{4}^+$ 1/2,-1/4,z; 1/2,-1/4,3/8
($\bar{4}_z|3/4,1/4,3/4$)

(41) $\bar{4}^-$ x,0,3/4; 1/8,0,3/4
($\bar{4}_x^{-1}|1/4,3/4,3/4$)

(42) d (3/4,-1/4,1/4) x,y+1/2,$\bar{y}$
($m_{yz}|3/4,1/4,3/4$)

(43) d (1/4,1/4,1/4) x,y,y
($m_{\bar{y}z}|1/4,1/4,1/4$)

(44) $\bar{4}^+$ x,1/2,-1/4; 3/8,1/2,-1/4
($\bar{4}_x|3/4,3/4,1/4$)

(45) $\bar{4}^+$ -1/4,y,1/2; -1/4,3/8,1/2
($\bar{4}_y|1/4,3/4,3/4$)

(46) d (1/4,3/4,-1/4) $\bar{x}$+1/2,y,x
($m_{xz}|3/4,3/4,1/4$)

(47) $\bar{4}^-$ 3/4,y,0; 3/4,1/8,0
($\bar{4}_y^{-1}|3/4,1/4,3/4$)

(48) d (1/4,1/4,1/4) x,y,x
($m_{\bar{x}z}|1/4,1/4,1/4$)

For (1/2,1/2,1/2) + set

(1) t (1/2,1/2,1/2)
($1|1/2,1/2,1/2$)

(2) 2 0,1/4,z
($2_z|0,1/2,0$)

(3) 2 1/4,y,0
($2_y|1/2,0,0$)

(4) 2 x,0,1/4
($2_x|0,0,1/2$)

(5) 3^+ (1/2,1/2,1/2) x,x,x
($3_{xyz}|1/2,1/2,1/2$)

(6) 3^+ (1/6,-1/6,1/6)
$\bar{x}$-1/6,x+1/3,$\bar{x}$
($3_{x\bar{y}\bar{z}}^{-1}|0,0,1/2$)

(7) 3^+ (-1/6,1/6,1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}^{-1}|0,1/2,0$)

(8) 3^+ (1/6,1/6,-1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6,x
($3_{xy\bar{z}}^{-1}|1/2,0,0$)

(9) 3^- (1/2,1/2,1/2) x,x,x
($3_{xyz}^{-1}|1/2,1/2,1/2$)

(10) 3^- (1/6,-1/6,-1/6)
x+1/6,$\bar{x}$+1/6,$\bar{x}$
($3_{\bar{x}yz}|1/2,0,0$)

(11) 3^- (-1/6,-1/6,1/6)
$\bar{x}$+1/3,$\bar{x}$+1/6, x
($3_{xy\bar{z}}|0,0,1/2$)

(12) 3^- (-1/6,1/6,-1/6)
$\bar{x}$-1/6, x+1/3,$\bar{x}$
($3_{x\bar{y}z}|0,1/2,0$)

(13) 2 (1/2,1/2,0) x,x+1/4,3/8
(2_{xy}|1/4,3/4,3/4)

(14) 2 x,$\bar{x}$+1/4,1/8
($2_{\bar{x}y}$|1/4,1/4,1/4)

(15) 4^- (0,0,1/4) 3/4,0,z
(4_z^{-1}|3/4,3/4,1/4)

(16) 4^+ (0,0,3/4) 1/4,1/2,z
(4_z|3/4,1/4,3/4)

(17) 4^- (1/4,0,0) x,3/4,0
(4_x^{-1}|1/4,3/4,3/4)

(18) 2 (0,1/2,1/2) 3/8,y-1/4,y
(2_{yz}|3/4,1/4,3/4)

(19) 2 1/8,y+1/4,$\bar{y}$
($2_{\bar{y}z}$|1/4,1/4,1/4)

(20) 4^+ (3/4,0,0) x,1/4,1/2
(4_x|3/4,3/4,1/4)

(21) 4^+ (0,3/4,0) 1/2,y,1/4
(4_y|1/4,3/4,3/4)

(22) 2 (1/2,0,1/2) x+1/4,3/8,x
(2_{xz}|3/4,3/4,1/4)

(23) 4^- (0,1/2,0) 0,y,3/4
(4_y^{-1}|3/4,1/4,3/4)

(24) 2 $\bar{x}$+1/4,1/8,x
($2_{\bar{x}z}$|1/4,1/4,1/4)

(25) $\bar{1}$ 1/4,1/4,1/4
($\bar{1}$|1/2,1/2,1/2)

(26) b (0,1/2,0) x,y,0
(m_z|0,1/2,0)

(27) a (1/2,0,0) x,0,z
(m_y|1/2,0,0)

(28) c (0,0,1/2) 0,y,z
(m_x|0,0,1/2)

(29) $\bar{3}^+$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}$|1/2,1/2,1/2)

(30) $\bar{3}^+$ $\bar{x}$-1/2,x,$\bar{x}$;
-1/4,-1/4,1/4
($\bar{3}_{x\bar{y}z}^{-1}$|0,0,1/2)

(31) $\bar{3}^+$ x-1/2,$\bar{x}$+1/2,$\bar{x}$;
-1/4,1/4,-1/4
($\bar{3}_{\bar{x}yz}^{-1}$|0,1/2,0)

(32) $\bar{3}^+$ $\bar{x}$,$\bar{x}$-1/2,x;
1/4,-1/4,-1/4
($\bar{3}_{xy\bar{z}}^{-1}$|1/2,0,0)

(33) $\bar{3}^-$ x,x,x;
1/4,1/4,1/4
($\bar{3}_{xyz}^{-1}$|1/2,1/2,1/2)

(34) $\bar{3}^-$ x+1/2,$\bar{x}$-1/2,$\bar{x}$;
1/4,-1/4,1/4
($\bar{3}_{\bar{x}yz}$|1/2,0,0)

(35) $\bar{3}^-$ $\bar{x}$,$\bar{x}$+1/2,x;
-1/4,1/4,1/4
($\bar{3}_{xy\bar{z}}$|0,0,1/2)

(36) $\bar{3}^-$ $\bar{x}$+1/2,x,$\bar{x}$;
1/4,1/4,-1/4
($\bar{3}_{x\bar{y}z}$|0,1/2,0)

(37) d (1/4,-1/4,1/4) x+1/2,$\bar{x}$,z
(m_{xy}|3/4,1/4,1/4)

(38) d (3/4,3/4,3/4) x,x,z
($m_{\bar{x}y}$|3/4,3/4,3/4)

(39) $\bar{4}^-$ 0,1/4,z; 0,1/4,3/8
($\bar{4}_z^{-1}$|1/4,1/4,3/4)

(40) $\bar{4}^+$ 1/2,1/4,z; 1/2,1/4,1/8
($\bar{4}_z$|1/4,3/4,1/4)

(41) $\bar{4}^-$ x,0,1/4; 3/8,0,1/4
($\bar{4}_x^{-1}$|3/4,1/4,1/4)

(42) d (1/4,1/4,-1/4) x,y+1/2,$\bar{y}$
(m_{yz}|1/4,3/4,1/4)

(43) d (3/4,3/4,3/4) x,y,y
($m_{\bar{y}z}$|3/4,3/4,3/4)

(44) $\bar{4}^+$ x,1/2,1/4; 1/8,1/2,1/4
($\bar{4}_x$|1/4,1/4,3/4)

(45) $\bar{4}^+$ 1/4,y,1/2; 1/4,1/8,1/2
($\bar{4}_y$|3/4,1/4,1/4)

(46) d (-1/4,1/4,1/4) $\bar{x}$+1/2,y,x
(m_{xz}|1/4,1/4,3/4)

(47) $\bar{4}^-$ 1/4,y,0; 1/4,3/8,0
($\bar{4}_y^{-1}$|1/4,3/4,1/4)

(48) d (3/4,3/4,3/4) x,y,x
($m_{\bar{x}z}$|3/4,3/4,3/4)

Symmetry Operations sub-tables for two-dimensional space groups

1 p1

(1) 1
(1|0,0)

2 p2

(1) 1
(1|0,0)

(2) 2 0,0
(2_z|0,0)

3 pm

(1) 1
(1|0,0)

(2) m 0,y
(m_x|0,0)

4 pg

(1) 1
(1|0,0)

(2) b 0,y
(m_x|0,1/2)

5 cm

For (0,0) + set

(1) 1
(1|0,0)

(2) m 0,y
(m_x|0,0)

For (1/2,1/2) + set

(1) t (1/2,1/2)
(1|1/2,1/2)

(2) b 1/4,y
(m_x|1/2,1/2)

6 p2mm

(1) 1
(1|0,0)

(2) 2 0,0
(2_z|0,0)

(3) m 0,y
(m_x|0,0)

(4) m x,0
(m_y|0,0)

7 p2mg

(1) 1
(1|0,0)

(2) 2 0,0
(2_z|0,0)

(3) m 1/4,y
(m_x|1/2,0)

(4) a x,0
(m_y|1/2,0)

8 p2gg

(1) 1
(1|0,0)

(2) 2 0,0
(2_z|0,0)

(3) b 1/4,y
(m_x|1/2,1/2)

(4) a x,1/4
(m_y|1/2,1/2)

9 c2mm

For (0,0) + set

(1) 1
$(1|0,0)$

(2) 2 0,0
$(2_z|0,0)$

(3) m 0,y
$(m_x|0,0)$

(4) m x,0
$(m_y|0,0)$

For (1/2,1/2) + set

(1) t (1/2,1/2)
$(1|1/2,1/2)$

(2) 2 1/4,1/4
$(2_z|1/2,1/2)$

(3) b 1/4,y
$(m_x|1/2,1/2)$

(4) a x,1/4
$(m_y|1/2,1/2)$

10 p4

(1) 1
$(1|0,0)$

(2) 2 0,0
$(2_z|0,0)$

(3) 4^+ 0,0
$(4_z|0,0)$

(4) 4^- 0,0
$(4_z^{-1}|0,0)$

11 p4mm

(1) 1
$(1|0,0)$

(2) 2 0,0
$(2_z|0,0)$

(3) 4^+ 0,0
$(4_z|0,0)$

(4) 4^- 0,0
$(4_z^{-1}|0,0)$

(5) m 0,y
$(m_x|0,0)$

(6) m x,0
$(m_y|0,0)$

(7) m x,x
$(m_{\bar{x}y}|0,0)$

(8) m x,$\bar{x}$
$(m_{xy}|0,0)$

12 p4gm

(1) 1
$(1|0,0)$

(2) 2 0,0
$(2_z|0,0)$

(3) 4^+ 0,0
$(4_z|0,0)$

(4) 4^- 0,0
$(4_z^{-1}|0,0)$

(5) b 1/4,y
$(m_x|1/2,1/2)$

(6) a x,1/4
$(m_y|1/2,1/2)$

(7) g (1/2,1/2) x,x
$(m_{\bar{x}y}|1/2,1/2)$

(8) m x+1/2,$\bar{x}$
$(m_{xy}|1/2,1/2)$

13 p3

(1) 1
$(1|0,0)$

(2) 3^+ 0,0
$(3_z|0,0)$

(3) 3^- 0,0
$(3_z^{-1}|0,0)$

14 p3m1

(1) 1
$(1|0,0)$

(2) 3^+ 0,0
$(3_z|0,0)$

(3) 3^- 0,0
$(3_z^{-1}|0,0)$

(4) m x,$\bar{x}$
$(m_{xy}|0,0)$

(5) m x,2x
$(m_x|0,0)$

(6) m 2x,x
$(m_y|0,0)$

15 p31m

(1) 1
$(1|0,0)$

(2) 3^+ 0,0
$(3_z|0,0)$

(3) 3^- 0,0
$(3_z^{-1}|0,0)$

(4) m x,x
$(m_3|0,0)$

(5) m x,0
$(m_2|0,0)$

(6) m 0,y
$(m_1|0,0)$

16 p6

(1) 1
(1|0,0)

(2) 3^+ 0,0
(3_z|0,0)

(3) 3^- 0,0
(3_z^{-1}|0,0)

(4) 2 0,0
(2_z|0,0)

(5) 6^- 0,0
(6_z^{-1}|0,0)

(6) 6^+ 0,0
(6_z|0,0)

17 p6mm

(1) 1
(1|0,0)

(2) 3^+ 0,0
(3_z|0,0)

(3) 3^- 0,0
(3_z^{-1}|0,0)

(4) 2 0,0
(2_z|0,0)

(5) 6^- 0,0
(6_z^{-1}|0,0)

(6) 6^+ 0,0
(6_z|0,0)

(7) m x,$\bar{x}$
(m_{xy}|0,0)

(8) m x,2x
(m_x|0,0)

(9) m 2x,x
(m_y|0,0)

(10) m x,x
(m_3|0,0)

(11) m x,0
(m_2|0,0)

(12) m 0,y
(m_1|0,0)

Symmetry Operations sub-tables for one-dimensional space groups

1 *p*1

(1) 1
(1|0)

2 *p*m

(1) 1
(1|0)

(2) m 0
(m|0)

Comparison of point group operation symbols

In the following we compare the symbols used for the point group operation R used in Seitz symbols $(R|\mathbf{t})$ in *Seitz Notation for Symmetry Operations of one-, two-, and three-dimensional Space Groups* with the corresponding symbols used in the *International Tables for Crystallography* Volume A, *Space-Group Symmetry* (2005) and in other sets of symbols of point group operations. The comparison table is divided into three parts, the first for cubic point group operations, the second for hexagonal point group operations, and the third for point group operation symbols used in the *International Tables for Crystallography* Volume A, *Space-Group Symmetry* (2005) in trigonal space groups described with rhombohedral coordinate axes. Each subtable is divided into eleven columns, except for the third which contains only three and compares the point group operations used in the Seitz symbols only to the corresponding symbols used in the *International Tables for Crystallography* Volume A, *Space-Group Symmetry* (2005) :

Column 1) Sequential numbering of the point group operations in each subtable: This numbering also specifies the point group operation as the point group operation associated with the *symmetry operation* of the same number listed in the *International Tables for Crystallography* Volume A, *Space-Group Symmetry* (2005) for, respectively, the cubic space group No. 221, $Pm\bar{3}m$, the hexagonal space group No. 191, P6/mmm, and the trigonal space group No. 166, $R\bar{3}m$, described in rhombohedral coordinate axes.

Column 2a and 2b) Point group operation description taken from the geometric description of the symmetry operation given in the *International Tables for Crystallography* Volume A, *Space-Group Symmetry* (2005) .

Column 2c) Corresponding coordinate triplets found in the *General positions* in the *International Tables for Crystallography* Volume A, *Space-Group Symmetry* (2005) . These may be interpreted as a shorthand description of the point group operation in matrix notation. This notation is also known as Jones faithful representation.

Column 3) Point group symbols used for R in these tabulations of *Seitz Notation for Symmetry Operations of one-, two-, and three-dimensional Space Groups.* This notation has been used in the Seitz notation given in Vol. E, *Subperiodic Groups* of the *International Tables for Crystallography* (2002), and in the International-like tables of the properties of both Magnetic Subperiodic Groups (Litvin, 2005) and Magnetic Space Groups (Litvin, 2008).

Column 4) Point group symbols used in Section 3.4 of Vol. D, *Physical Properties of Crystals* of the *International Tables of Crystallography* (2003) and Kopský and Boček (2003) in accompanying software.

Column 5) Point group symbols used by Bradley and Cracknell (1972).

Column 6) Point group symbols used by Altmann and Herzig (1994).

Column 7) Point group symbols used by Ascher.

Column 8) Point Group symbols used by Koptsik (1966).

Column 9) Point Group symbols used by Kovalev (1965).

Column 10) Point Group symbols used by Zak et al (1969).

Column 11) Point Group symbols used by Herring (1942).

Column 12) Point Group symbols used by Miller and Love (1967).

References:

Altmann, S.L. and Herzig, P. *Point Group Theory Tables*, Clarendon Press, Oxford (1994).

Ascher, E., *Properties of Shubnikov Point Groups*, Part 1. Battelle Report, Geneva.

Bradley, C.J. and Cracknell, A.P., *The Mathematical Theory of Symmetry in Solids*. OUP, Oxford (1972).

Herring, C., *Character Tables for Two Space Groups*, J. Franklin Inst. 233, 525-543, (1942). (see also Table 9.1.1 of Lax, M., Symmetry Principles in Solid State and Molecular Physics, Wiley-Interscience, New York, (1974).)

International Tables for X-ray Crystallography (1976), *Vol. 1, Symmetry Groups*, edited by N.F.M. Henry and K. Lonsdale. Birmingham: Kynock Press [Previous editions: 1952, 1965, 1969].

International Tables for Crystallography (2005). *Vol. A*, *Space-Group Symmetry*, edited by Th. Hahn. Heidelberg: Springer [Previous editions: 1983, 1987, 1995, and 2002].

International Tables for Crystallography (2010). *Vol. E, Subperiodic Groups*, edited by V. Kopský and D.B. Litvin. Chichester: Wiley [Previous edition: 2002].

Janovec, V. and Přívratská, J., Domain structures, Section 3.4 of the *International Tables for Crystallography* (2003). Vol. D, *Physical Properties of Crystals*, edited by A. Authier: Dordrecht, Kluwer

Kopský, V. and Boček, P., Supplementary Software GI*KoBo-1 to the *International Tables for Crystallography* (2003). Vol. D, *Physical Properties of Crystals*, edited by A. Authier: Dordrecht, Kluwer.

Koptsik, V.A., *Shubnikov Groups. Handbook on the Symmetry and Physical Properties of Crystal Structures*, Izd. M.G.U., Moscow (1966) (in Russian). (English translation of text: J. Kopecky & B.O. Loopstra, Fysica Memo 175, Stichting, Reactor Centrum Nederland, (1971)).

Kovalev, O.V., *Irreducible representations of the space groups*, Gordon & Breach, New York (1965).

On-line *International Tables for Crystallography* Vol. A: http://it.iucr.org/A/

Litvin, D.B., *Tables of Properties of Magnetic Subperiodic Groups*, Acta Cryst. **A61** 382-385 (2005).

Litvin, D.B. *Tables of Crystallographic Properties of Magnetic Space Groups*, Acta Cryst. **A64** 419-424 (2008).

Miller, S.C. and Love, W.F., Tables of Irreducible Representations of Space Groups and Co-Representations of Magnetic Space Groups, Boulder: Pruett Press (1967).

Seitz, F. Z., *A Matrix-Algebraic Development of the Crystallographic Groups*, Kristallogr. **88** 433-459 (1934); **90** 289-313 (1935); **91** 336-366 (1935); **94** 100-130 (1936).

Zak, J., editor, Casher, A., Glück, M., & Gur, Y., *The irreducible representations of space groups*, W.A. Benjamin, Inc., New York, (1969).

Cubic point group operations

1	2a 2b	2c	3	4	5	6	7	8	9	10	11	12
1)	1	x,y,z	1	e	E	E	1	1	h_1	E	ε	1
2)	2 0,0,z	$\bar{x},\bar{y},z$	2_z	2_z	C_{2z}	C_{2z}	2_z	4_3^2	h_4	U^z	δ_{2z}	4
3)	2 0,y,0	$\bar{x},y,\bar{z}$	2_y	2_y	C_{2y}	C_{2y}	2_y	4_2^2	h_3	U^y	δ_{2y}	3
4)	2 x,0,0	$x,\bar{y},\bar{z}$	2_x	2_x	C_{2x}	C_{2x}	2_x	4_1^2	h_2	U^x	δ_{2x}	2
5)	3^+ x,x,x	z,x,y	3_{xyz}	3_p	C_{31}^+	C_{31}^+	3_δ	3_1	h_9	C_3^{xyz}	δ_{3xyz}	9
6)	3^+ $\bar{x},x,\bar{x}$	$z,\bar{x},\bar{y}$	$3_{x\bar{y}z}^{-1}$	3_s	C_{34}^+	C_{34}^+	3_β	3_3	h_{10}	$C_3^{2x\bar{y}z}$	$\delta_{3\bar{x}y\bar{z}}$	10
7)	3^+ $x,\bar{x},\bar{x}$	$\bar{z},\bar{x},y$	$3_{\bar{x}yz}^{-1}$	3_r	C_{33}^+	C_{33}^+	3_α	3_4	h_{12}	$C_3^{2\bar{x}yz}$	$\delta_{3x\bar{y}z}$	12
8)	3^+ $\bar{x},\bar{x},x$	$\bar{z},x,\bar{y}$	$3_{xy\bar{z}}^{-1}$	3_q	C_{32}^+	C_{32}^+	3_γ	3_2	h_{11}	$C_3^{2xy\bar{z}}$	$\delta_{3\bar{x}yz}$	11
9)	3^- x,x,x	y,z,x	3_{xyz}^{-1}	3_p^2	C_{31}^-	C_{31}^-	3_δ^2	3_1^2	h_5	C_3^{2xyz}	δ_{3xyz}^{-1}	5
10)	3^- $x,\bar{x},\bar{x}$	$\bar{y},z,\bar{x}$	$3_{\bar{x}yz}$	3_r^2	C_{33}^-	C_{33}^-	3_α^2	3_4^2	h_7	$C_3^{\bar{x}yz}$	$\delta_{3x\bar{y}z}^{-1}$	7
11)	3^- $\bar{x},\bar{x},x$	$y,\bar{z},\bar{x}$	$3_{xy\bar{z}}$	3_q^2	C_{32}^-	C_{32}^-	3_γ^2	3_2^2	h_6	$C_3^{xy\bar{z}}$	$\delta_{3\bar{x}yz}^{-1}$	6
12)	3^- $\bar{x},x,\bar{x}$	$\bar{y},\bar{z},x$	$3_{x\bar{y}z}$	3_s^2	C_{34}^-	C_{34}^-	3_β^2	3_3^2	h_8	$C_3^{x\bar{y}z}$	$\delta_{3\bar{x}y\bar{z}}^{-1}$	8
13)	2 x,x,0	y,x,$\bar{z}$	2_{xy}	2_{xy}	C_{2a}	C'_{2a}	2_e	2_1	h_{16}	U^{xy}	δ_{xy}	16
14)	2 x,$\bar{x}$,0	$\bar{y},x,\bar{z}$	$2_{\bar{x}y}$	$2_{x\bar{y}}$	C_{2b}	C'_{2b}	2_f	2_2	h_{13}	$U^{\bar{x}y}$	$\delta_{\bar{x}y}$	13
15)	4^- 0,0,z	y,$\bar{x}$,z	4_z^{-1}	4_z^3	C_{4z}^-	C_{4z}^-	4_z^3	4_3^3	h_{15}	C_4^{3z}	δ_{4z}^{-1}	15
16)	4^+ 0,0,z	$\bar{y}$,x,z	4_z	4_z	C_{4z}^+	C_{4z}^+	4_z	4_3	h_{14}	C_4^z	δ_{4z}	14
17)	4^- x,0,0	x,z,$\bar{y}$	4_x^{-1}	4_x^3	C_{4x}^-	C_{4x}^-	4_x^3	4_1^3	h_{20}	C_4^{3x}	δ_{4x}^{-1}	20
18)	2 0,y,y	$\bar{x}$,z,y	2_{yz}	2_{yz}	C_{2d}	C'_{2d}	2_a	2_5	h_{18}	U^{yz}	δ_{yz}	18

19)	2 0,y,$\bar{y}$	$\bar{x}$,$\bar{z}$,$\bar{y}$	$2_{\bar{y}z}$	$2_{y\bar{z}}$	C_{2f}	C'_{2f}	2_b	2_6	h_{17}	$U^{\bar{y}z}$	$\delta_{\bar{y}z}$	17
20)	4^+ x,0,0	x,$\bar{z}$,y	4_x	4_x	C^+_{4x}	C^+_{4x}	4_x	4_1	h_{19}	C_4^x	δ_{4x}	19
21)	4^+ 0,y,0	z,y,$\bar{x}$	4_y	4_y	C^+_{4y}	C^+_{4y}	4_y	4_2	h_{24}	C_4^y	δ_{4y}	24
22)	2 x,0,x	z,$\bar{y}$,x	2_{xz}	2_{zx}	C_{2c}	C'_{2c}	2_c	2_3	h_{23}	U^{xz}	δ_{xz}	23
23)	4^- 0,y,0	$\bar{z}$,y,x	4_y^{-1}	4_y^3	C^-_{4y}	C^-_{4y}	4_y^3	4_2^3	h_{22}	C_4^{3y}	δ_{4y}^{-1}	22
24)	2 $\bar{x}$,0,x	$\bar{z}$,$\bar{y}$,$\bar{x}$	$2_{\bar{x}z}$	$2_{z\bar{x}}$	C_{2e}	C'_{2e}	2_d	2_4	h_{21}	$U^{\bar{x}z}$	$\delta_{\bar{x}z}$	21
25)	$\bar{1}$ 0,0,0	$\bar{x}$,$\bar{y}$,$\bar{z}$	$\bar{1}$	i	I	i	$\bar{1}$	$\tilde{2}$	h_{25}	I	i	25
26)	m x,y,0	x,y,$\bar{z}$	m_z	m_z	σ_z	σ_z	m_z	m_3	h_{28}	σ^z	ρ_z	28
27)	m x,0,z	x,$\bar{y}$,z	m_y	m_y	σ_y	σ_y	m_y	m_2	h_{27}	σ^y	ρ_y	27
28)	m 0,y,z	$\bar{x}$,y,z	m_x	m_x	σ_x	σ_x	m_x	m_1	h_{26}	σ^x	ρ_x	26
29)	$\bar{3}^+$ x,x,x	$\bar{z}$,$\bar{x}$,$\bar{y}$	$\bar{3}_{xyz}$	$\bar{3}_p$	S^-_{61}	S^-_{61}	$\bar{3}_\delta$	$\tilde{6}_1^5$	h_{33}	S_6^{5xyz}	σ_{6xyz}	33
30)	$\bar{3}^+$ $\bar{x}$,x,$\bar{x}$	$\bar{z}$,x,y	$\bar{3}_{x\bar{y}\bar{z}}^{-1}$	$\bar{3}_s$	S^-_{64}	S^-_{64}	$\bar{3}_\beta$	$\tilde{6}_3^5$	h_{34}	$S_6^{x\bar{y}z}$	$\sigma_{6\bar{x}y\bar{z}}$	34
31)	$\bar{3}^+$ x,$\bar{x}$,$\bar{x}$	z,x,$\bar{y}$	$\bar{3}_{\bar{x}yz}^{-1}$	$\bar{3}_r$	S^-_{63}	S^-_{63}	$\bar{3}_\alpha$	$\tilde{6}_4^5$	h_{36}	$S_6^{\bar{x}yz}$	$\sigma_{6x\bar{y}\bar{z}}$	36
32)	$\bar{3}^+$ $\bar{x}$,$\bar{x}$,x	z,$\bar{x}$,y	$\bar{3}_{xy\bar{z}}^{-1}$	$\bar{3}_q$	S^-_{62}	S^-_{62}	$\bar{3}_\gamma$	$\tilde{6}_2^5$	h_{35}	$S_6^{xy\bar{z}}$	$\sigma_{6\bar{x}\bar{y}z}$	35
33)	$\bar{3}^-$ x,x,x	$\bar{y}$,$\bar{z}$,$\bar{x}$	$\bar{3}_{xyz}^{-1}$	$\bar{3}_p^5$	S^+_{61}	S^+_{61}	$\bar{3}_\delta^2$	$\tilde{6}_1$	h_{29}	S_6^{xyz}	σ_{6xyz}^{-1}	29
34)	$\bar{3}^-$ x,$\bar{x}$,$\bar{x}$	y,$\bar{z}$,x	$\bar{3}_{\bar{x}yz}$	$\bar{3}_r^5$	S^+_{63}	S^+_{63}	$\bar{3}_\alpha^2$	$\tilde{6}_4$	h_{31}	$S_6^{5\bar{x}yz}$	$\sigma_{6x\bar{y}\bar{z}}^{-1}$	31
35)	$\bar{3}^-$ $\bar{x}$,$\bar{x}$,x	$\bar{y}$,z,x	$\bar{3}_{xy\bar{z}}$	$\bar{3}_q^5$	S^+_{62}	S^+_{62}	$\bar{3}_\gamma^2$	$\tilde{6}_2$	h_{30}	$S_6^{5xy\bar{z}}$	$\sigma_{6\bar{x}\bar{y}z}^{-1}$	30
36)	$\bar{3}^-$ $\bar{x}$,x,$\bar{x}$	y,z,$\bar{x}$	$\bar{3}_{x\bar{y}z}$	$\bar{3}_s^5$	S^+_{64}	S^+_{64}	$\bar{3}_\beta^2$	$\tilde{6}_3$	h_{32}	$S_6^{5x\bar{y}z}$	$\sigma_{6\bar{x}y\bar{z}}^{-1}$	32
37)	m x,$\bar{x}$,z	$\bar{y}$,$\bar{x}$,z	m_{xy}	m_{xy}	σ_{da}	σ_{d1}	m_e	m_5	h_{40}	σ^{xy}	ρ_{xy}	40
38)	m x,x,z	y,x,z	$m_{\bar{x}y}$	$m_{x\bar{y}}$	σ_{db}	σ_{d2}	m_f	m_4	h_{37}	$\sigma^{\bar{x}y}$	$\rho_{\bar{x}y}$	37

39)	$\bar{4}^-$ 0,0,z	$\bar{y},x,\bar{z}$	$\bar{4}_z^{-1}$	$\bar{4}_z^3$	S_{4z}^+	S_{4z}^+	$\bar{4}_z^3$	$\tilde{4}_3$	h_{39}	S_4^z	σ_{4z}^{-1}	39
40)	$\bar{4}^+$ 0,0,z	$y,\bar{x},\bar{z}$	$\bar{4}_z$	$\bar{4}_z$	S_{4z}^-	S_{4z}^-	$\bar{4}_z$	$\tilde{4}_3^3$	h_{38}	S_4^{3z}	σ_{4z}	38
41)	$\bar{4}^-$ x,0,0	$\bar{x},\bar{z},y$	$\bar{4}_x^{-1}$	$\bar{4}_x^3$	S_{4x}^+	S_{4x}^+	$\bar{4}_x^3$	$\tilde{4}_1$	h_{44}	S_4^x	σ_{4x}^{-1}	44
42)	m x,y,$\bar{y}$	$x,\bar{z},\bar{y}$	m_{yz}	m_{yz}	σ_{dd}	σ_{d4}	m_a	m_9	h_{42}	σ^{yz}	ρ_{yz}	42
43)	m x,y,y	x,z,y	$m_{\bar{y}z}$	$m_{y\bar{z}}$	σ_{df}	σ_{d6}	m_b	m_8	h_{41}	$\sigma^{\bar{y}z}$	$\rho_{\bar{y}z}$	41
44)	$\bar{4}^+$ x,0,0	$\bar{x},z,\bar{y}$	$\bar{4}_x$	$\bar{4}_x$	S_{4x}^-	S_{4x}^-	$\bar{4}_x$	$\tilde{4}_1^3$	h_{43}	S_4^{3x}	σ_{4x}	43
45)	$\bar{4}^+$ 0,y,0	$\bar{z},\bar{y},x$	$\bar{4}_y$	$\bar{4}_y$	S_{4y}^-	S_{4y}^-	$\bar{4}_y$	$\tilde{4}_2^3$	h_{48}	S_4^{3y}	σ_{4x}	48
46)	m $\bar{x}$,y,x	$\bar{z},y,\bar{x}$	m_{xz}	m_{zx}	σ_{dc}	σ_{d3}	m_c	m_7	h_{47}	σ^{xz}	ρ_{xz}	47
47)	$\bar{4}^-$ 0,y,0	$z,\bar{y},\bar{x}$	$\bar{4}_y^{-1}$	$\bar{4}_y^3$	S_{4y}^+	S_{4y}^+	$\bar{4}_y^3$	$\tilde{4}_2$	h_{46}	S_4^y	σ_{4x}^{-1}	46
48)	m x,y,x	z,y,x	$m_{\bar{x}z}$	$m_{z\bar{x}}$	σ_{de}	σ_{d5}	m_d	m_6	h_{45}	$\sigma^{\bar{x}z}$	$\rho_{\bar{z}x}$	45

Hexagonal point group operations

1	2a 2b	2c	3	4	5	6	7	8	9	10	11	12
1)	1	x,y,z	1	e	E	E	1	1	h_1	E	ε	1
2)	3^+ 0,0,z	$\bar{y}$,x-y,z	3_z	3_z	C_3^+	C_3^+	3	6^2	h_3	C_6^{2z}	δ_{3z}	3
3)	3^- 0,0,z	$\bar{x}$+y,$\bar{x}$,z	3_z^{-1}	3_z^2	C_3^-	C_3^-	3^2	6^4	h_5	C_6^{4z}	δ_{3z}^{-1}	5
4)	2 0,0,z	$\bar{x}$,$\bar{y}$,z	2_z	2_z	C_2	C_2	2	6^3	h_4	C_2	δ_{2z}	4
5)	6^- 0,0,z	y,$\bar{x}$+y,z	6_z^{-1}	6_z^5	C_6^-	C_6^-	6^5	6^5	h_6	C_6^{5z}	δ_{6z}^{-1}	6
6)	6^+ 0,0,z	x-y,x,z	6_z	6_z	C_6^+	C_6^+	6	6	h_2	C_6^z	δ_{6z}	2
7)	2 x,x,0	y,x,$\bar{z}$	2_{xy}	$2_{x''}$	C_{23}''	C_{23}''	2_5	2_5	h_{11}	U^{xy}	δ'_{22}	9
8)	2 x,0,0	x-y,$\bar{y}$,$\bar{z}$	2_x	2_x	C_{21}''	C_{21}''	2_1	2_1	h_9	U^x	δ'_{24}	7
9)	2 0,y,0	$\bar{x}$,$\bar{x}$+y,$\bar{z}$	2_y	$2_{x'}$	C_{22}''	C_{22}''	2_3	2_3	h_7	U^y	δ'_{23}	11
10)	2 x,$\bar{x}$,0	$\bar{y}$,$\bar{x}$,$\bar{z}$	2_3	$2_{y''}$	C_{23}'	C_{23}'	2_6	2_2	h_8	U^3	δ''_{22}	12
11)	2 x,2x,0	$\bar{x}$+y,y,$\bar{z}$	2_2	2_y	C_{21}'	C_{21}'	2_2	2_4	h_{12}	U^2	δ''_{24}	10
12)	2 2x,x,0	x,x-y,$\bar{z}$	2_1	$2_{y'}$	C_{22}'	C_{22}'	2_4	2_6	h_{10}	U^1	δ''_{23}	8
13)	$\bar{1}$ 0,0,0	$\bar{x}$,$\bar{y}$,$\bar{z}$	$\bar{1}$	i	I	i	$\bar{1}$	$\tilde{2}$	h_{13}	I	i	13
14)	$\bar{3}^+$ 0,0,z	y,$\bar{x}$+y,$\bar{z}$	$\bar{3}_z$	$\bar{3}_z$	S_6^-	S_6^-	$\bar{3}$	$\tilde{6}^5$	h_{15}	S_6^{5z}	σ_6	15
15)	$\bar{3}^-$ 0,0,z	x-y,x,$\bar{z}$	$\bar{3}_z^{-1}$	$\bar{3}_z^5$	S_6^+	S_6^+	$\bar{3}^2$	$\tilde{6}$	h_{17}	S_6^z	σ_6^{-1}	17
16)	m x,y,0	x,y,$\bar{z}$	m_z	m_z	σ_h	m	m	m	h_{16}	σ^z	σ	16
17)	$\bar{6}^-$ 0,0,z	$\bar{y}$,x-y,$\bar{z}$	$\bar{6}_z^{-1}$	$\bar{6}^5$	S_3^+	S_3^+	$\bar{6}^5$	$\tilde{3}$	h_{18}	S_3^z	σ_3^{-1}	18
18)	$\bar{6}^+$ 0,0,z	$\bar{x}$+y,$\bar{x}$,$\bar{z}$	$\bar{6}_z$	$\bar{6}_z$	S_3^-	S_3^-	$\bar{6}$	$\tilde{3}^5$	h_{14}	S_3^{2z}	σ_3	14

19)	m	x,$\overline{x}$,z	$\overline{y}$,$\overline{x}$,z	m_{xy}	$m_{x''}$	σ_{v3}	σ_{v3}	m_5	m_2	h_{23}	σ^{xy}	σ'_{22}	21
20)	m	x,2x,z	$\overline{x}$+y,y,z	m_x	m_x	σ_{v1}	σ_{v1}	m_1	m_6	h_{21}	σ^{x}	σ'_{24}	19
21)	m	2x,x,z	x,x-y,z	m_y	$m_{x'}$	σ_{v2}	σ_{v2}	m_3	m_4	h_{19}	σ^{y}	σ'_{23}	23
22)	m	x,x,z	y,x,z	m_3	$m_{y''}$	σ_{d3}	σ_{d3}	m_6	m_5	h_{20}	σ^{3}	σ''_{22}	24
23)	m	x,0,z	x-y,$\overline{y}$,z	m_2	m_y	σ_{d1}	σ_{d1}	m_2	m_3	h_{24}	σ^{2}	σ''_{24}	22
24)	m	0,y,z	$\overline{x}$,$\overline{x}$+y,z	m_1	$m_{y'}$	σ_{d2}	σ_{d2}	m_4	m_1	h_{22}	σ^{1}	σ''_{23}	20

Hexagonal point group operations using rhombohedral axes

1	2a 2b	2c	3
1)	1	x,y,z	1
2)	3^+ x,x,x	z,x,y	3_{xyz}
3)	3^- x,x,x	y,z,x	3_{xyz}^{-1}
4)	2 x,$\bar{x}$,0	$\bar{y}$,$\bar{x}$,$\bar{z}$	$2_{\bar{x}y}$
5)	2 0,y,$\bar{y}$	$\bar{x}$,$\bar{z}$,$\bar{y}$	$2_{\bar{y}z}$
6)	2 $\bar{x}$,0,x	$\bar{z}$,$\bar{y}$,$\bar{x}$	$2_{\bar{x}z}$
7)	$\bar{1}$ 0,0,0	$\bar{x}$,$\bar{y}$,$\bar{z}$	$\bar{1}$
8)	$\bar{3}^+$ x,x,x	$\bar{z}$,$\bar{x}$,$\bar{y}$	$\bar{3}_{xyz}$
9)	$\bar{3}^-$ x,x,x	$\bar{y}$,$\bar{z}$,$\bar{x}$	$\bar{3}_{xyz}^{-1}$
10)	m x,x,z	y,x,z	$m_{\bar{x}y}$
11)	m x,y,y	x,z,y	$m_{\bar{y}z}$
12)	m x,y,x	z,y,x	$m_{\bar{x}z}$