20. SYMMETRY AND ITS GENERALIZATION

20.1-10 COLOUR GROUP THEORY AND TABLES IN CRYSTAL PHYSICS. By J.N. Kotzev, Faculty of Physics, University of Sofia, Sofia-26, Bulgaria.

In a series of our papers with V.A. Koptyk the general theory of colour symmetry was proposed on the basis of group extension theory (using direct, semidirect and wreath products) and full tables of all generalized point groups (including permutations of colours and rotations of magnetic and electric moments) were given (see Comm. JINR-Dubna, 1974, P. 8067, P. 8068, P. 8466, a review in MATCH 1980, 0, 41).

We applied the colour groups in the classification of magnetic structures and phase transitions (Kotzev, 1975).

Extensive tables of permutational colour space groups were published by Koptyk, Zamoscev, Harke and others. Their practical application becomes possible only after our recent papers in Physica A (1982) 114, 576, 588; Phys. Rev. B (1982) 26, 7523, 26, 6974; Group Theoretical Methods in Physics, Nauka, Moscow, 1983, v. 1, p. 352. For example, in the symbol of the colour group G/H(F,F',F'') of m=G/H colours is concentrated all the symmetry information for the phase transition from symmetry G to its subgroup H and Waker D2 is the kernel of the irreducible representation D2 of G responsible for transition. A number of similar transitions are classified on the base of the chromomorphisms determined by the image ImDG=(F,F',F'') of m=G/H colours.

20.1-11 ON THE CURVILINEAR HOMOLOGY AND THE CURVILINEAR SIMILARITY SYMMETRY. Z. Durski and H. Nowaczek, Department of Chemistry, Warsaw Technical University, Warszawa, Poland.

As the result of the combination of homology /Mikheev, 1961/ and similarity symmetry /Shubnikov, 1960, with curvilinear symmetry /Kaliakin, 1925/, we have got a new kind of generalized symmetry. Fig. 1, 2, 3 are showing the results of the symmetrical operations for homology, similarity symmetry and curvilinear symmetry, which correspond with reflection across a plane. Those figures are showing different reflections: fig 1 - reflection across homology plane H; fig 2 - reflection across similarity plane S; fig 3 - reflection across curvilinear plane C.

The curvilinear homology is formed /fig. 4/ by the connection of the homology with curvilinear symmetry, and the curvilinear similarity symmetry is formed /fig. 5/ by the connection of the similarity symmetry with curvilinear symmetry.

On the fig. 3 and 5 - 1, 2, 3... are the parts of the figure generated one after another.

On the fig. 5 /scheme/ the changes of distances and dimensions of the parts of the figure have not been taken in consideration.