On the other hand, 5-dimensional crystallographic groups of the category $G_{53}$... can be found by the use of the 3-dimensional classic groups $G_3$... and their generalizations with antineummetry, $p$- and $(p')$-symmetry (ignoring enantiomorphism), when $p=2,3,4,6$ (where only the groups of the full marked generalized symmetries are extracted). Thus, there are 33075 $G_3$ (in accordance with the full numbers of the groups $G_{30}$, $G_{31}$, $G_{32}$ and $G_{33}$: $1206G_{30}$ (in accordance with the full numbers of the groups $G_{30}$, $G_{31}$ and $G_{32}$: $5177G_{31}$; $928G_{32}$; $1274G_{33}$; $2597G_{33}$).

Finally, the groups of the categories $G_{32}$ and $G_{33}$ are fully described by the classical groups $G_2$ and $G_4$ and their generalizations with the 31 nontrivial crystallographic 3-symmetries in the geometric classification.

For the completion of the scheme of the 5-dimensional crystallographic groups of symmetry it is necessary to find the numbers of the groups of the categories $G_{56}$, $G_{50}$, $G_{51}$, $G_{54}$ and $G_{50}$.

References:

20.1-4 DIFFRACTION GROUPS OF CBED PATTERNS. By F. Good.

Symmetry rules so far derived for CBED patterns can be summarized in the form of matrix generators operating in diffraction space, which contain the 2-dimensional rotation groups as a part of a component.

In contrast to the matrix representation of space groups in kinematic x-ray diffraction space (i.e. Fourier space: Beinsteck, A. and Ewald, P.P. (1962). Acta Crystallogr. 15, 1225) it is the di-periodic layer groups rather than the 3-dimensional space groups which are defined. This is a consequence of the substitution of parallel-plate boundary conditions for the restrictions imposed by Friedel's law in x-ray kinematic scattering.

As a result 80 groups, containing 43 symmetric groups, can be defined in diffraction space. From these the previously-derived 31 CBED groups (Button, B.F., Eadmark, A.J., Steeds, D.M. and Rackham, G.M. (1976). Phil. Trans. 281, 171) emerge as the point-group component. It is therefore clear that the same boundary conditions have been assumed in this previous derivation as in the present one. The two systems are hence mutually consistent, the increased resolution of the new derivation coming from (a) the use of arithmetic rather than geometric definition for the rotation group and (b) the inclusion of dynamic extinctions of the zero layer.

20.1-5 THE METHOD OF MATRICAL REPRESENTATION OF CRYSTAL SYMMETRY GROUPS AND ITS POSSIBILITIES By T.N. Lepo, V.A. Lepo. Brest pedagogical institute, Brest, Belarusia, USSR.

The correlations between macro-symmetry, the parameters of the unit cells and physical properties of crystals are analyzed. An analytical method of construction and analysis of crystallographic projections is shown. It is developed the practical method for mutual transition of crystal and reciprocal lattice. It is given the way of transformation from one crystallographic basis to another and analyzed the changes of crystallographic indexes of planes, directions and points in this case. It is proposed the method of practical representation for symmetry of sets and layers. The results of calculations are compared to the experimental data got for some monoclinic (layer silicates) and cubic (semiconductors) crystals.

References: