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containing only one point $1z$, *i.e.* the points are shifted along the z axis. The shifts of the two points are related by a twofold rotation .2., *i.e.* are running in opposite directions. The point configurations of the two limiting complexes P_a and B refer to the special parameter values $z = 0$ and $z = \frac{1}{4}$, respectively.

The central parts of some lattice complexes with two or three degrees of freedom are formed by the descriptive symbol of a univariant Weissenberg complex instead of that of an invariant lattice complex. This is the case only if the corresponding characteristic space-group type does not refer to a suitable invariant lattice complex.

Example

In $\frac{1}{4}00$ .2. P_aB1z2y ($Pmma$ $4k$ $\frac{1}{4}yz$), each of the two points $\frac{1}{4}0z$ and $\frac{3}{4}0\bar{z}$, represented by $\frac{1}{4}00$ .2. P_aB1z, is replaced by a site set $2y$ of two points forming a dumb-bell. These dumb-bells are oriented parallel to the y axis.

The symbol of a noncharacteristic Wyckoff position is deduced from that of the characteristic position. The four parts of the descriptive symbol are subjected to the transformation necessary to map the characteristic Wyckoff position onto the Wyckoff position under consideration.

Example

The lattice complex with characteristic Wyckoff position $Imma$ $8h$ $0yz$ has the descriptive symbol .2. B_b2yz for this position. Another Wyckoff position of this lattice complex is $Imma$ $8i$ $x\frac{1}{4}z$. The corresponding point configurations are mapped onto each other by interchanging positive x and negative y directions and shifting by $(\frac{1}{4}\frac{1}{4}\frac{1}{4})$. Therefore, the descriptive symbol for Wyckoff position $Imma$ i is $\frac{1}{4}\frac{1}{4}\frac{1}{4}$ 2.. A_a2xz.

In some cases, the Wyckoff position described by a lattice-complex symbol has more degrees of freedom than the lattice complex (see Section 14.2.2.1). In such a case, a letter (or a string of letters) in brackets is added to the symbol.

Examples

$tP[z]$ for $P4$ a, $aP[xyz]$ for $P1$ a.

14.2.3.4. *Properties of the descriptive symbols*

Different kinds of relations between lattice complexes are brought out.

Examples

$P \leftrightarrow P4x \leftrightarrow P4x2z$, $\quad I4xxx \leftrightarrow ..2\ I4xxx$, $\quad P4x \leftrightarrow I4x$.

In many cases, limiting-complex relations can be deduced from the symbols. This applies to limiting complexes due either to special metrical parameters (*e.g.* $cP \leftrightarrow rP$ *etc.*) or to special values of coordinates (*e.g.* both $P4x$ and $P4xx$ are limiting complexes of $P4xy$). If the site set consists of only one point, the central part of the symbol specifies all corresponding limiting complexes without degrees of freedom that are due to special values of the coordinates (*e.g.* 2_12_1. $FA_aB_bC_cI_aI_bI_c1xyz$ for the general position of $P2_12_12_1$).

references