

List of symbols and abbreviations used in this volume

(1) Points and point space

P, Q, R, X	points
O	origin
A_n, \mathbb{A}_n, P_n	n -dimensional affine space
E_n, \mathbb{E}_n	n -dimensional Euclidean point space
x, y, z ; or x_i	point coordinates
\mathbf{x}	column of point coordinates
\tilde{X}	image point
$\tilde{\mathbf{x}}$	column of coordinates of an image point
\tilde{x}_i	coordinates of an image point
\mathbf{x}'	column of coordinates in a new coordinate system (after basis transformation)
x'_i	coordinates in a new coordinate system

(2) Vectors and vector space

$\mathbf{a}, \mathbf{b}, \mathbf{c}$; or \mathbf{a}_i	basis vectors of the space
\mathbf{r}, \mathbf{x}	vectors, position vectors
\mathbf{o}	zero vector (all coefficients zero)
a, b, c	lengths of basis vectors
α, β, γ ; or α_j	angles between basis vectors
\mathbf{r}	column of vector coefficients
r_i	vector coefficients
$(\mathbf{a})^T$	row of basis vectors
\mathbf{V}_n	n -dimensional vector space

(3) Mappings and their matrices and columns

\mathbf{A}, \mathbf{W}	(3×3) matrices
\mathbf{A}^T	matrix \mathbf{A} transposed
\mathbf{I}	(3×3) unit matrix
A_{ik}, W_{ik}	coefficients
$(\mathbf{A}, \mathbf{a}), (\mathbf{W}, \mathbf{w})$	matrix–column pairs
\mathbf{W}	augmented matrix
$\mathbf{x}, \tilde{\mathbf{x}}, \mathbf{t}$	augmented columns
\mathbf{P}, \mathbb{P}	transformation matrices
$\mathbf{A}, \mathbf{l}, \mathbf{W}$	mappings
\mathbf{w}	column of the translation part of a mapping
w_i	coefficients of the translation part of a mapping
\mathbf{G}, G_{ik}	fundamental matrix and its coefficients
$\det(\dots)$	determinant of a matrix
$\text{tr}(\dots)$	trace of a matrix

(4) Groups

\mathcal{G}	group; space group
\mathcal{R}	space group (Chapter 1.4)
\mathcal{H}, \mathcal{U}	subgroups of \mathcal{G}
\mathcal{M}	maximal subgroup of \mathcal{G} (Chapter 1.4)
\mathcal{M}	Hermann's group (Chapters 1.2, 1.7, 2.1)
$\mathcal{P}, \mathcal{S}, \mathcal{V}, \mathcal{Z}$	groups or sets of group elements, e.g. cosets
$\mathcal{T}(\mathcal{G}), \mathcal{T}(\mathcal{R})$	group of all translations of \mathcal{G}, \mathcal{R}
\mathcal{A}	group of all affine mappings = affine group
\mathcal{E}	group of all isometries (motions) = Euclidean group
\mathcal{F}	factor group
\mathcal{I}	trivial group, consisting of the unit element e only
\mathcal{N}	normal subgroup
\mathcal{O}	group of all orthogonal mappings = orthogonal group
$\mathcal{N}_{\mathcal{G}}(\mathcal{H})$	normalizer of \mathcal{H} in \mathcal{G}
$\mathcal{N}_{\mathcal{E}}(\mathcal{H})$	Euclidean normalizer of \mathcal{H}
$\mathcal{N}_{\mathcal{A}}(\mathcal{H})$	affine normalizer of \mathcal{H}
$\mathcal{P}_{\mathcal{G}}, \mathcal{P}_{\mathcal{H}}$	point groups of the space groups \mathcal{G}, \mathcal{H}
$\mathcal{S}_{\mathcal{G}}(X), \mathcal{S}_{\mathcal{H}}(X)$	site-symmetry groups of point X in the space groups \mathcal{G}, \mathcal{H}
a, b, g, h, m, t	group elements
e	unit element
$\mathbf{2}, \mathbf{2}_1, \mathbf{m}, \mathbf{I}, \dots$	symmetry operations
i or $[i]$	index of \mathcal{H} in \mathcal{G}

(5) Symbols used in the tables

p	prime number > 1
n, n', n'', n'''	arbitrary positive integer numbers
q, r, u, v, w	arbitrary integer numbers in the given range
$\mathbf{a}, \mathbf{b}, \mathbf{c}$	basis vectors of the space group
$\mathbf{a}', \mathbf{b}', \mathbf{c}'$	basis vectors of the subgroup or supergroup
x, y, z	point coordinates in the space group
$t(1, 0, 0),$ $t(0, 1, 0), \dots$	generating translations

(6) Abbreviations

HM symbol	Hermann–Mauguin symbol
IT A	<i>International Tables for Crystallography</i> Volume A
PCA	parent-clamping approximation
k -subgroup	<i>klassengleiche</i> subgroup
t -subgroup	<i>translationengleiche</i> subgroup