

**Space Group Tables 1/2**  
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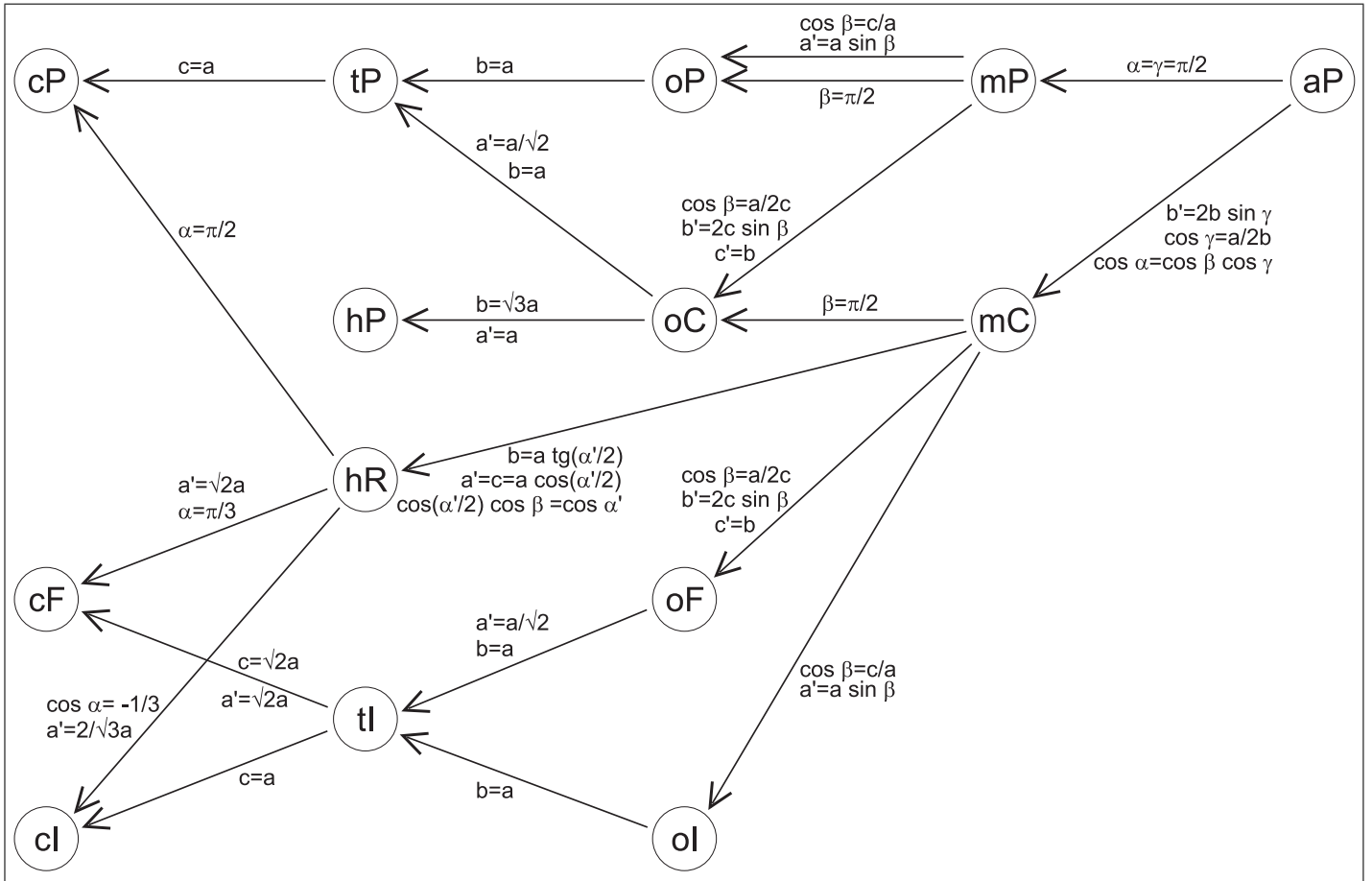


Figure 1: The hierarchy of Bravais lattices.

Table 1: Bravais lattices. Shown are: lattice system, parameter values, independent parameters, Bravais space group, Hermann–Mauguin and Schoenflies notations. Lattice centerings: P – primitive, C –  $xy$ -face centered, A –  $yz$ -face centered, F – face centered, I – body centered, R – rhombohedral.

anorthic (triclinic)		$a, b, c, \alpha, \beta, \gamma$	P-1	aP	$\Gamma_t$
monoclinic	$\alpha = \gamma = \pi/2$	$a, b, c, \beta$	P2/m C2/m	mP mC	$\Gamma_m$ $\Gamma_m^b$
orthorhombic	$\alpha = \beta = \gamma = \pi/2$	$a, b, c$	Pmmm Cmmm Fmmm Immm	oP oC oF oI	$\Gamma_o$ $\Gamma_o^b$ $\Gamma_o^f$ $\Gamma_o^v$
tetragonal	$a = b, \alpha = \beta = \gamma = \pi/2$	$a, c$	P4/mmm I4/mmm	tP tI	$\Gamma_q$ $\Gamma_q^v$
rhombohedral	$a = b = c, \alpha = \beta = \gamma$	$a, \alpha$	R-3m	hR	$\Gamma_{rh}$
hexagonal	$a = b, \alpha = \beta = \pi/2, \gamma = 2\pi/3$	$a, c$	P6/mmm	hP	$\Gamma_h$
cubic	$a = b = c, \alpha = \beta = \gamma = \pi/2$	$a$	Pm-3m Fm-3m Im-3m	cP cF cI	$\Gamma_c$ $\Gamma_c^f$ $\Gamma_c^v$

## Space Group Tables 2/2

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Table 2: Space groups. Listed are crystallographic system, class, and first group number in the class. Symorphic groups are in bold.

a	1	$C_1$	1	<b>P1</b>			
	-1	$C_i$	2	<b>P-1</b>			
m	2	$C_2$	3	<b>P2</b> $P2_1$ <b>C2</b>			
	m	$C_s$	6	<b>Pm</b> $Pc$ <b>Cm</b> $Cc$			
	2/m	$C_{2h}$	10	<b>P2/m</b> $P2_1/m$ <b>C2/m</b> $P2/c$ $P2_1/c$ $C2/c$			
o	222	$D_2$	16	<b>P222</b> $P222_1$ $P2_12_12$ $P2_12_12_1$ $C222_1$ <b>C222</b> <b>F222</b> <b>I222</b> $I2_12_12_1$			
	mm2	$C_{2v}$	25	<b>Pmm2</b> $Pmc2_1$ $Pcc2$ $Pma2$ $Pca2_1$ $Pnc2$ $Pmn2_1$ $Pba2$ $Pna2_1$ $Pnn2$ <b>Cmm2</b> $Cmc2_1$ $Ccc2$ <b>Amm2</b> $Abm2$ $Ama2$ $Aba2$ <b>Fmm2</b> $Fdd2$ <b>Imm2</b> $Iba2$ $Ima2$			
	mmm	$D_{2h}$	47	<b>Pmmm</b> $Pnmm$ $Pccm$ $Pbam$ $Pmma$ $Pnna$ $Pmna$ $Pcca$ $Pbam$ $Pccn$ $Pbcm$ $Pnmm$ $Pmnm$ $Pbcn$ $Pbca$ $Pnma$ $Cmcm$ $Cmca$ <b>Cmmm</b> $Cccm$ $Cmma$ $Ccca$ <b>Fmmm</b> $Fddd$ <b>Immm</b> $Ibam$ $Ibca$ $Imma$			
t	4	$C_4$	75	<b>P4</b> $P4_1$ $P4_2$ $P4_3$ <b>I4</b> $I4_1$			
	-4	$S_4$	81	<b>P-4</b> <b>I-4</b>			
	4/m	$C_{4h}$	83	<b>P4/m</b> $P4_2/m$ $P4/n$ $P4_2/n$ <b>I4/m</b> $I4_1/a$			
	422	$D_4$	89	<b>P422</b> $P4_22$ $P4_122$ $P4_12_12$ $P4_222$ $P4_22_12$ $P4_322$ $P4_32_12$ <b>I422</b> $I4_122$			
	4mm	$C_{4v}$	99	<b>P4mm</b> $P4bm$ $P4_2cm$ $P4_2nm$ $P4cc$ $P4nc$ $P4_2mc$ $P4_2bc$ <b>I4mm</b> $I4cm$ $I4_1md$ $I4_1cd$			
	-42m	$D_{2d}$	111	<b>P-42m</b> $P-4_2c$ $P-4_21m$ $P-4_21c$ <b>P-4m2</b> $P-4c2$ $P-4b2$ $P-4n2$ <b>I-4m2</b> $I-4c2$ <b>I-42m</b> $I-4_2d$			
	4/mmm	$D_{4h}$	123	<b>P4/mmm</b> $P4/mcc$ $P4/nbm$ $P4/nnc$ $P4/mbm$ $P4/mnc$ $P4/nmm$ $P4/ncc$ $P4_2/mmc$ $P4_2/mcm$ $P4_2/nbc$ $P4_2/nmm$ $P4_2/mbc$ $P4_2/mnm$ $P4_2/nmc$ $P4_2/ncm$ <b>I4/mmm</b> $I4/mcm$ $I4_1/amd$ $I4_1/acd$			
h	3	$C_3$	143	<b>P3</b> $P3_1$ $P3_2$ <b>R3</b>			
	-3	$C_{3i}$	147	<b>P-3</b> <b>R-3</b>			
	32	$D_3$	149	<b>P312</b> <b>P321</b> $P3_112$ $P3_121$ $P3_212$ $P3_12_121$ <b>R32</b>			
	3m	$C_{3v}$	156	<b>P3m1</b> <b>P31m</b> $P3c1$ $P31c$ <b>R3m</b> $R3c$			
	-3m	$D_{3d}$	162	<b>P-31m</b> $P-31c$ <b>P-3m1</b> $P-3c1$ <b>R-3m</b> $R-3c$			
	6	$C_6$	168	<b>P6</b> $P6_1$ $P6_5$ $P6_2$ $P6_4$ $P6_3$			
	-6	$C_{3h}$	174	<b>P-6</b>			
	6/m	$C_{6h}$	175	<b>P6/m</b> $P6_3/m$			
	622	$D_6$	177	<b>P622</b> $P6_122$ $P6_522$ $P6_222$ $P6_422$ $P6_322$			
	6mm	$C_{6v}$	183	<b>P6mm</b> $P6cc$ $P6_3cm$ $P6_3mc$			
	-6m2	$D_{3h}$	187	<b>P-6m2</b> $P-6c2$ <b>P-62m</b> $P-6_2c$			
	6/mmm	$D_{6h}$	191	<b>P6/mmm</b> $P6/mcc$ $P6_3/mcm$ $P6_3/mmc$			
	c	23	$T$	195	<b>P23</b> <b>F23</b> <b>I23</b> $P2_13$ $I2_13$		
m-3		$T_h$	200	<b>Pm-3</b> $Pn-3$ <b>Fm-3</b> $Fd-3$ <b>Im-3</b> $Pa-3$ $Ia-3$			
432		$O$	207	<b>P432</b> $P4_232$ <b>F432</b> $F4_132$ <b>I432</b> $P4_332$ $P4_132$ $I4_132$			
-43m		$T_d$	215	<b>P-43m</b> <b>F-43m</b> <b>I-43m</b> $P-4_3n$ $F-4_3c$ $I-4_3d$			
m-3m		$O_h$	221	<b>Pm-3m</b> $Pn-3n$ $Pm-3n$ $Pn-3m$ <b>Fm-3m</b> $Fm-3c$ $Fd-3m$ $Fd-3c$ <b>Im-3m</b> $Ia-3d$			