

Kubisch flächenzentriertes Gitter

O_h	E	$3C_2$	$8C_3$	$6C_4$	$6C_2'$	I	$3IC_2$	$8IC_3$	$6IC_4$	$6IC_2'$	T_d	C_{4v}	C_{3v}	C_{2v}	Basisfunktionen : Prototypen	$Y_{l,m}$
Γ_1^+	1	1	1	1	1	1	1	1	1	1	Γ_1	Γ_1	Γ_1	Γ_1	1 (bzw. $r^2 = x^2 + y^2 + z^2$)	$l \geq 0$
Γ_2^+	1	1	1	-1	-1	1	1	1	-1	-1	Γ_2	Γ_3	Γ_2	Γ_2	$(x^2 - y^2)(y^2 - z^2)(z^2 - x^2)$	$l \geq 6$
Γ_3^+	2	2	-1	0	0	2	2	-1	0	0	Γ_3	$\Gamma_1 + \Gamma_3$	Γ_3	$\Gamma_1 + \Gamma_2$	$2z^2 - x^2 - y^2, \sqrt{3}(x^2 - y^2)$	$l \geq 2$
Γ_4^+	3	-1	0	1	-1	3	3	0	1	-1	Γ_4	$\Gamma_2 + \Gamma_5$	$\Gamma_2 + \Gamma_3$	$\Gamma_2 + \Gamma_3 + \Gamma_4$	$xy(x^2 - y^2), yz(y^2 - z^2), zx(z^2 - x^2)$	$l \geq 4$
Γ_5^+	3	-1	0	-1	1	3	3	0	-1	1	Γ_5	$\Gamma_4 + \Gamma_5$	$\Gamma_1 + \Gamma_3$	$\Gamma_1 + \Gamma_3 + \Gamma_4$	yz, zx, xy	$l \geq 2$
Γ_1^-	1	1	1	1	1	-1	-1	-1	-1	-1	Γ_2	Γ_2	Γ_2	Γ_3	$xyz(x^2 - y^2)(y^2 - z^2)(z^2 - x^2)$	$l \geq 9$
Γ_2^-	1	1	1	-1	-1	-1	-1	-1	1	1	Γ_1	Γ_4	Γ_1	Γ_4	xyz	$l \geq 3$
Γ_3^-	2	2	-1	0	0	-2	-2	1	0	0	Γ_3	$\Gamma_2 + \Gamma_4$	Γ_3	$\Gamma_3 + \Gamma_4$	$xyz(2z^2 - x^2 - y^2), \sqrt{3}xyz(x^2 - y^2)$	$l \geq 5$
Γ_4^-	3	-1	0	1	-1	-3	-3	0	-1	1	Γ_5	$\Gamma_1 + \Gamma_5$	$\Gamma_1 + \Gamma_3$	$\Gamma_1 + \Gamma_2 + \Gamma_4$	x, y, z	$l \geq 1$
Γ_5^-	3	-1	0	-1	1	-3	-3	0	1	-1	Γ_4	$\Gamma_3 + \Gamma_5$	$\Gamma_2 + \Gamma_3$	$\Gamma_1 + \Gamma_2 + \Gamma_3$	$z(x^2 - y^2), x(y^2 - z^2), y(z^2 - x^2)$	$l \geq 3$

D_{4h}	E	$2C_4$	C_2	$2C_2'$	$2C_2''$	I	$2IC_4$	IC_2	$2IC_2'$	$2IC_2''$	C_{4v}	C_{2v}
Γ_1^+	1	1	1	1	1	1	1	1	1	1	Γ_1	Γ_1
Γ_2^+	1	1	1	-1	-1	1	1	1	-1	-1	Γ_2	Γ_3
Γ_3^+	1	-1	1	1	-1	1	-1	1	1	-1	Γ_3	Γ_1
Γ_4^+	1	-1	1	-1	1	1	-1	1	-1	1	Γ_4	Γ_3
Γ_5^+	2	0	-2	0	0	2	0	-2	0	0	Γ_5	$\Gamma_2 + \Gamma_4$
Γ_1^-	1	1	1	1	1	-1	-1	-1	-1	-1	Γ_2	Γ_3
Γ_2^-	1	1	1	-1	-1	-1	-1	-1	1	1	Γ_1	Γ_1
Γ_3^-	1	-1	1	1	-1	-1	1	-1	-1	1	Γ_4	Γ_3
Γ_4^-	1	-1	1	-1	1	-1	1	-1	1	-1	Γ_3	Γ_1
Γ_5^-	2	0	-2	0	0	-2	0	2	0	0	Γ_5	$\Gamma_2 + \Gamma_4$

C_{4v}	E	$2C_4$	C_2	$2IC_2'$	$2IC_2''$
Γ_1	1	1	1	1	1
Γ_2	1	1	1	-1	-1
Γ_3	1	-1	1	1	-1
Γ_4	1	-1	1	-1	1
Γ_5	2	0	-2	0	0

D_{3d}	E	$2C_3$	$3C_2$	I	$2IC_3$	$3IC_2$	C_{3v}
Γ_1^+	1	1	1	1	1	1	Γ_1
Γ_2^+	1	1	-1	1	1	-1	Γ_2
Γ_3^+	2	-1	0	2	-1	0	Γ_3
Γ_1^-	1	1	1	-1	-1	-1	Γ_2
Γ_2^-	1	1	-1	-1	-1	1	Γ_1
Γ_3^-	2	-1	0	-2	1	0	Γ_3

Properties of the thirty-two point groups
 G. F. Koster, J. O. Dimmock, R. G. Wheeler, and H. Statz
 MIT Press, Cambridge, MA (1963)

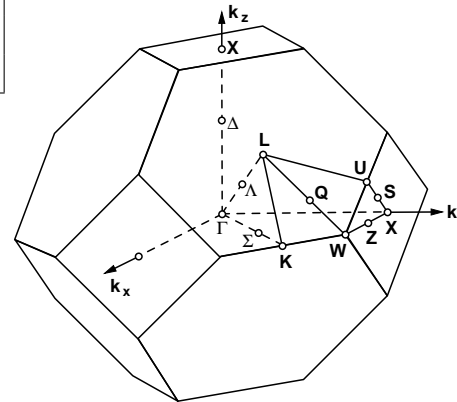
C_{3v}	E	$2C_3$	$3IC_2$
Γ_1	1	1	1
Γ_2	1	1	-1
Γ_3	2	-1	0

C_2	E	C_2
C_s	E	IC_2
Γ_1	1	1
Γ_2	1	-1

D_{2d}	E	C_2	$2IC_2'$	$2IC_4$	$2C_2''$	C_{2v}
Γ_1	1	1	1	1	1	Γ_1
Γ_2	1	1	-1	1	-1	Γ_3
Γ_3	1	1	-1	-1	1	Γ_3
Γ_4	1	1	1	-1	-1	Γ_1
Γ_5	2	-2	0	0	0	$\Gamma_2 + \Gamma_4$

C_{2v}	E	C_2	IC_2'	IC_2''
Γ_1	1	1	1	1
Γ_2	1	-1	1	-1
Γ_3	1	1	-1	-1
Γ_4	1	-1	-1	1

T_d	E	$3C_2$	$8C_3$	$6IC_4$	$6IC_2'$	C_{3v}	C_{2v}	C_s
Γ_1	1	1	1	1	1	Γ_1	Γ_1	Γ_1
Γ_2	1	1	1	-1	-1	Γ_2	Γ_3	Γ_2
Γ_3	2	2	-1	0	0	Γ_3	$\Gamma_1 + \Gamma_3$	$\Gamma_1 + \Gamma_2$
Γ_4	3	-1	0	1	-1	$\Gamma_2 + \Gamma_3$	$\Gamma_2 + \Gamma_3 + \Gamma_4$	$\Gamma_1 + 2\Gamma_2$
Γ_5	3	-1	0	-1	1	$\Gamma_1 + \Gamma_3$	$\Gamma_1 + \Gamma_2 + \Gamma_4$	$2\Gamma_1 + \Gamma_2$



FCC / Diamantgitter (Zinkblende)			
Position	Symmetrie	Position	Symmetrie
Γ	O_h (T_d)	U	C_{2v} (C_s)
Δ	C_{4v} (C_{2v}^a)	S	C_{2v} (C_s)
X	D_{4h}^b (D_{2d})	X	D_{4h} (D_{2d})
Λ	C_{3v} (C_{3v})	Z	C_{2v} (C_2)
L	D_{3d} (C_{3v})	W	D_{2d} (S_4)
Σ	C_{2v} (C_s)	Q	C_2 (C_1)
K	C_{2v} (C_s)		

^aEntartung von Γ_2 und Γ_4 wegen Zeitumkehr
^bDiamantgitter: nur zweidimensionale projektive Darstellungen