

## Appendix 7

### CORRELATION TABLES

These tables show how the irreducible representations of various point groups correlate with the irreducible representations of some of their subgroups. For some of the correlations care must be taken as to which axes and planes go into each other. (See Section 7-5c.)

$O_h$	O	$T_d$	$T_h$	$D_{4h}$	$D_{3d}$
$A_{1g}$	$A_1$	$A_1$	$A_g$	$A_{1g}$	$A_{1g}$
$A_{2g}$	$A_2$	$A_2$	$A_g$	$B_{1g}$	$A_{2g}$
$E_g$	E	E	$E_g$	$A_{1g}+B_{1g}$	$E_g$
$T_{1g}$	$T_1$	$T_1$	$T_g$	$A_{2g}+E_g$	$A_{2g}+E_g$
$T_{2g}$	$T_2$	$T_2$	$T_g$	$B_{2g}+E_g$	$A_{1g}+E_g$
$A_{1u}$	$A_1$	$A_2$	$A_u$	$A_{1u}$	$A_{1u}$
$A_{2u}$	$A_2$	$A_1$	$A_u$	$B_{1u}$	$A_{2u}$
$E_u$	E	E	$E_u$	$A_{1u}+B_{1u}$	$E_u$
$T_{1u}$	$T_1$	$T_2$	$T_u$	$A_{2u}+E_u$	$A_{2u}+E_u$
$T_{2u}$	$T_2$	$T_1$	$T_u$	$B_{2u}+E_u$	$A_{1u}+E_u$

O	T	$D_4$	$D_3$	$T_d$	T	$D_{2d}$	$C_{3v}$
$A_1$	A	$A_1$	$A_1$	$A_1$	A	$A_1$	$A_1$
$A_2$	A	$B_1$	$A_2$	$A_2$	A	$B_1$	$A_2$
E	E	$A_1+B_1$	E	E	E	$A_1+B_1$	E
$T_1$	T	$A_2+E$	$A_2+E$	$T_1$	T	$A_2+E$	$A_2+E$
$T_2$	T	$B_2+E$	$A_1+E$	$T_2$	T	$B_2+E$	$A_1+E$

$T_h$	T	$D_{2h}$	$S_6$		T	$D_2$	$C_3$	$C_2$
$A_g$	A	$A_g$		$A_g$	A	A	A	A
$E_g$	E	$2A_g$		$E_g$	E	2A	E	2A
$T_g$	T	$B_{1g}+B_{2g}+B_{3g}$		$A_g+E_g$	T	$B_1+B_2+B_3$	A+E	A+2B
$A_u$	A	$A_u$		$A_u$				
$E_u$	E	$2A_u$		$E_u$				
$T_u$	T	$B_{1u}+B_{2u}+B_{3u}$		$A_u+E_u$				

  

$D_{6h}$	$D_6$	$C'_2$ $D_{3h}$	$C''_2$ $D_{3h}$	$C'_2$ $D_{3d}$	$C''_2$ $D_{3d}$	$C_{6h}$	$C_{6v}$	$\sigma_v \rightarrow \sigma(yz)$ $\sigma_h \rightarrow \sigma(xy)$ $D_{2h}$
$A_{1g}$	$A_1$	$A'_1$	$A'_1$	$A_{1g}$	$A_{1g}$	$A_g$	$A_1$	$A_g$
$A_{2g}$	$A_2$	$A'_2$	$A'_2$	$A_{2g}$	$A_{2g}$	$A_g$	$A_2$	$B_{1g}$
$B_{1g}$	$B_1$	$A''_1$	$A''_2$	$A_{1g}$	$A_{2g}$	$B_g$	$B_2$	$B_{2g}$
$B_{2g}$	$B_2$	$A''_2$	$A''_1$	$A_{2g}$	$A_{1g}$	$B_g$	$B_1$	$B_{3g}$
$E_{1g}$	$E_1$	$E''$	$E''$	$E_g$	$E_g$	$E_{1g}$	$E_1$	$B_{2g}+B_{3g}$
$E_{2g}$	$E_2$	$E'$	$E'$	$E_g$	$E_g$	$E_{2g}$	$E_2$	$A_g+B_{1g}$
$A_{1u}$	$A_1$	$A''_1$	$A''_1$	$A_{1u}$	$A_{1u}$	$A_u$	$A_2$	$A_u$
$A_{2u}$	$A_2$	$A''_2$	$A''_2$	$A_{2u}$	$A_{2u}$	$A_u$	$A_1$	$B_{1u}$
$B_{1u}$	$B_1$	$A'_1$	$A'_2$	$A_{1u}$	$A_{2u}$	$B_u$	$B_1$	$B_{2u}$
$B_{2u}$	$B_2$	$A'_2$	$A'_1$	$A_{2u}$	$A_{1u}$	$B_u$	$B_2$	$B_{3u}$
$E_{1u}$	$E_1$	$E'$	$E'$	$E_u$	$E_u$	$E_{1u}$	$E_1$	$B_{2u}+B_{3u}$
$E_{2u}$	$E_2$	$E''$	$E''$	$E_u$	$E_u$	$E_{2u}$	$E_2$	$A_u+B_{1u}$

  

$D_{4h}$	$D_4$	$C'_2$ $D_{2h}$	$C''_2$ $D_{2h}$	$C'_2$ $D_{2d}$	$C''_2$ $D_{2d}$	$C_{4h}$	$C_{4v}$	$C_4$	$S_4$
$A_{1g}$	$A_1$	$A_g$	$A_g$	$A_1$	$A_1$	$A_g$	$A_1$	A	A
$A_{2g}$	$A_2$	$B_{1g}$	$B_{1g}$	$A_2$	$A_2$	$A_g$	$A_2$	A	A
$B_{1g}$	$B_1$	$A_g$	$B_{1g}$	$B_1$	$B_2$	$B_g$	$B_1$	B	B
$B_{2g}$	$B_2$	$B_{1g}$	$A_g$	$B_2$	$B_1$	$B_g$	$B_2$	B	B
$E_g$	E	$B_{2g}+B_{3g}$	$B_{2g}+B_{3g}$	E	E	$E_g$	E	E	E
$A_{1u}$	$A_1$	$A_u$	$A_u$	$B_1$	$B_1$	$A_u$	$A_2$	A	B
$A_{2u}$	$A_2$	$B_{1u}$	$B_{1u}$	$B_2$	$B_2$	$A_u$	$A_1$	A	B
$B_{1u}$	$B_1$	$A_u$	$B_{1u}$	$A_1$	$A_2$	$B_u$	$B_2$	B	A
$B_{2u}$	$B_2$	$B_{1u}$	$A_u$	$A_2$	$A_1$	$B_u$	$B_1$	B	A
$E_u$	E	$B_{2u}+B_{3u}$	$B_{2u}+B_{3u}$	E	E	$E_u$	E	E	E

$D_{3h}$	$\sigma_h \rightarrow \sigma(yz)$			
	$D_3$	$C_{3h}$	$C_{3v}$	$C_{2v}$
$A'_1$	$A_1$	$A'$	$A_1$	$A_1$
$A'_2$	$A_2$	$A'$	$A_2$	$B_2$
$E'$	$E$	$E'$	$E$	$A_1+B_2$
$A''_1$	$A_1$	$A''$	$A_2$	$A_2$
$A''_2$	$A_2$	$A''$	$A_1$	$B_1$
$E''$	$E$	$E''$	$E$	$A_2+B_1$

$D_{3d}$				
	$S_6$	$D_3$	$C_{3v}$	$C_{2h}$
$A_{1g}$	$A_g$	$A_1$	$A_1$	$A_g$
$A_{2g}$	$A_g$	$A_2$	$A_2$	$B_g$
$E_g$	$E_g$	$E$	$E$	$A_g+B_g$
$A_{1u}$	$A_u$	$A_1$	$A_2$	$A_u$
$A_{2u}$	$A_u$	$A_2$	$A_1$	$B_u$
$E_u$	$E_u$	$E$	$E$	$A_u+B_u$

$C_{6h}$				
	$C_6$	$S_6$	$C_{3h}$	$C_{2h}$
$A_g$	$A$	$A_g$	$A'$	$A_g$
$B_g$	$B$	$A_g$	$A''$	$B_g$
$E_{1g}$	$E_1$	$E_g$	$E''$	$2B_g$
$E_{2g}$	$E_2$	$E_g$	$E'$	$2A_g$
$A_u$	$A$	$A_u$	$A''$	$A_u$
$B_u$	$B$	$A_u$	$A'$	$B_u$
$E_{1u}$	$E_1$	$E_u$	$E'$	$2B_u$
$E_{2u}$	$E_2$	$E_u$	$E''$	$2A_u$

$C_{6v}$	$\sigma_v \rightarrow \sigma(xz)$			
	$C_6$	$C_{3v}$	$C_{3v}$	$C_{2v}$
$A_1$	$A$	$A_1$	$A_1$	$A_1$
$A_2$	$A$	$A_2$	$A_2$	$A_2$
$B_1$	$B$	$A_1$	$A_2$	$B_1$
$B_2$	$B$	$A_2$	$A_1$	$B_2$
$E_1$	$E_1$	$E$	$E$	$B_1+B_2$
$E_2$	$E_2$	$E$	$E$	$A_1+A_2$

$D_4$					
	$C_4$	$C'_2$ $D_2$	$C''_2$ $D_2$	$D_2$	$C_3$
$A_1$	$A$	$A_1$	$A_1$	$A$	$A$
$A_2$	$A$	$A_2$	$A_2$	$B_1$	$A$
$B_1$	$B$	$A_1$	$A_2$	$B_2$	$A$
$B_2$	$B$	$A_2$	$A_1$	$B_3$	$A$
$E_1$	$E_1$	$E$	$E$	$B_2+B_3$	$E$
$E_2$	$E_2$	$E$	$E$	$A+B_1$	$E$

$D_4$			
	$C_4$	$C'_2$ $D_2$	$C''_2$ $D_2$
$A_1$	$A$	$A$	$A$
$A_2$	$A$	$B_1$	$B_1$
$B_1$	$B$	$A$	$B_1$
$B_2$	$B$	$B_1$	$A$
$E$	$E$	$B_2+B_3$	$B_2+B_3$

D <sub>2d</sub>	C <sub>2</sub> → C <sub>2</sub>			D <sub>2h</sub>	C <sub>2</sub>	C <sub>2</sub> (x)	C <sub>2</sub>	C <sub>2</sub> (x)	
	S <sub>4</sub>	D <sub>2</sub>	C <sub>2v</sub>		D <sub>2</sub>	C <sub>2h</sub>	C <sub>2h</sub>	C <sub>2v</sub>	C <sub>2v</sub>
A <sub>1</sub>	A	A	A <sub>1</sub>	A <sub>g</sub>	A	A <sub>g</sub>	A <sub>g</sub>	A <sub>1</sub>	A <sub>1</sub>
A <sub>2</sub>	A	B <sub>1</sub>	A <sub>2</sub>	B <sub>1g</sub>	B <sub>1</sub>	A <sub>g</sub>	B <sub>g</sub>	A <sub>2</sub>	B <sub>1</sub>
B <sub>1</sub>	B	A	A <sub>2</sub>	B <sub>2g</sub>	B <sub>2</sub>	B <sub>g</sub>	B <sub>g</sub>	B <sub>1</sub>	B <sub>2</sub>
B <sub>2</sub>	B	B <sub>1</sub>	A <sub>1</sub>	B <sub>3g</sub>	B <sub>3</sub>	B <sub>g</sub>	A <sub>g</sub>	B <sub>2</sub>	A <sub>2</sub>
E	E	B <sub>2</sub> +B <sub>3</sub>	B <sub>1</sub> +B <sub>2</sub>	A <sub>u</sub>	A	A <sub>u</sub>	A <sub>u</sub>	A <sub>2</sub>	A <sub>2</sub>
				B <sub>1u</sub>	B <sub>1</sub>	A <sub>u</sub>	B <sub>u</sub>	A <sub>1</sub>	B <sub>2</sub>
				B <sub>2u</sub>	B <sub>2</sub>	B <sub>u</sub>	B <sub>u</sub>	B <sub>2</sub>	B <sub>1</sub>
				B <sub>3u</sub>	B <sub>3</sub>	B <sub>u</sub>	A <sub>u</sub>	B <sub>1</sub>	A <sub>1</sub>

C <sub>4h</sub>	C <sub>4</sub> S <sub>4</sub> C <sub>2h</sub>			C <sub>4v</sub>	C <sub>4</sub>	σ <sub>v</sub> C <sub>2v</sub>	σ <sub>d</sub> C <sub>2v</sub>	C <sub>3h</sub>	C <sub>3</sub>	C <sub>s</sub>
	A <sub>g</sub>	A	A		A <sub>g</sub>	A <sub>1</sub>	A		A <sub>1</sub>	A <sub>1</sub>
B <sub>g</sub>	B	B	A <sub>g</sub>	A <sub>2</sub>	A	A <sub>2</sub>	A <sub>2</sub>	E'	E	2A'
E <sub>g</sub>	E	E	2B <sub>g</sub>	B <sub>1</sub>	B	A <sub>1</sub>	A <sub>2</sub>	A''	A	A''
A <sub>u</sub>	A	B	A <sub>u</sub>	B <sub>2</sub>	B	A <sub>2</sub>	A <sub>1</sub>	E''	E	2A''
B <sub>u</sub>	B	A	A <sub>u</sub>	E	E	B <sub>1</sub> +B <sub>2</sub>	B <sub>1</sub> +B			
E <sub>u</sub>	E	E	2B <sub>u</sub>							

C <sub>6</sub>	C <sub>3</sub> C <sub>2</sub>		D <sub>3</sub>	C <sub>3</sub>	C <sub>2</sub>	S <sub>6</sub>	C <sub>3</sub>	C <sub>1</sub>
	A	A		A	A <sub>1</sub>		A	A
B	A	B	A <sub>2</sub>	A	B	E <sub>g</sub>	E	2A <sub>g</sub>
E <sub>1</sub>	E	2B	E	E	A+B	A <sub>u</sub>	A	A <sub>u</sub>
E <sub>2</sub>	E	2A				E <sub>u</sub>	E	2A <sub>u</sub>

C <sub>3v</sub>	C <sub>3</sub> C <sub>s</sub>		C <sub>4</sub>	C <sub>2</sub>	S <sub>4</sub>	C <sub>2</sub>	D <sub>2</sub>	C <sub>2</sub>	C <sub>2</sub> (x)
	A <sub>1</sub>	A		A		A		A	A
A <sub>2</sub>	A	A''	B	A	B	A	B <sub>1</sub>	A	B
E	E	A'+A''	E	2B	E	2B	B <sub>2</sub>	B	B
							B <sub>3</sub>	B	A