CHARACTER TABLES FOR LINEAR POINT GROUPS

Character table for $C_{\infty v}$ point group

	E	$2C_\infty$	...	∞ & σ_v	Linear Functions, Rotations	Quadratic
$A_1=\Sigma^+$	1	1	...	1	z	x^2+y^2, z^2
$A_2=\Sigma^-$	1	1	...	-1	R_z	
$E_1=\Pi$	2	$2\cos(\Phi)$	...	0	(x, y) (R_x, R_y)	(xz, yz)
$E_2=\Delta$	2	$2\cos(2\varphi)$	...	0		(x^2-y^2, xy)
$E_3=\Phi$	2	$2\cos(3\varphi)$	...	0		
...	...	...	...	...		

Character table for $D_{\infty h}$ point group

	E	$2C_\infty$	...	$\infty\sigma_v$	i	$2S_\infty$	...	$\infty C'_2$	Linear Functions, Rotations	Quadratic
$A_{1g}=\Sigma^+_g$	1	1	...	1	1	1	...	1		x^2+y^2, z^2
$A_{2g}=\Sigma^-_g$	1	1	...	-1	1	1	...	-1	R_z	
$E_{1g}=\Pi_g$	2	2cos(φ)	...	0	2	-2cos(φ)	...	0	(R_x, R_y)	(xz, yz)
$E_{2g}=\Delta_g$	2	2cos(2φ)	...	0	2	2cos(2φ)	...	0		(x^2-y^2, xy)
$E_{3g}=\Phi_g$	2	2cos(3φ)	...	0	2	-2cos(3φ)	...	0		
...	...	...	...	...	...	...	...	...		
$A_{1u}=\Sigma^+_u$	1	1	...	1	-1	-1	...	-1	z	
$A_{2u}=\Sigma^-_u$	1	1	...	-1	-1	-1	...	1		
$E_{1u}=\Pi_u$	2	2cos(φ)	...	0	-2	2cos(φ)	...	0	(x, y)	
$E_{2u}=\Delta_u$	2	2cos(2φ)	...	0	-2	-2cos(2φ)	...	0		
$E_{3u}=\Phi_u$	2	2cos(3φ)	...	0	-2	2cos(3φ)	...	0		
...	...	...	...	...	...	...	...	...		