

### Direct Products 10

For  $C_{\infty v}, D_{\infty h}$

|            |            |            |                                       |                                  |
|------------|------------|------------|---------------------------------------|----------------------------------|
|            | $\Sigma^+$ | $\Sigma^-$ | $\Pi$                                 | $\Delta$                         |
| $\Sigma^+$ | $\Sigma^+$ | $\Sigma^-$ | $\Pi$                                 | $\Delta$                         |
| $\Sigma^-$ |            | $\Sigma^+$ | $\Pi$                                 | $\Delta$                         |
| $\Pi$      |            |            | $\Sigma^+ + [\Sigma^-]$<br>$+ \Delta$ | $\Pi + \Phi$                     |
| $\Delta$   |            |            |                                       | $\Sigma^+ + [\Sigma^-] + \Gamma$ |
| :          |            |            |                                       |                                  |

### Notation

|               |       |          |        |          |     |
|---------------|-------|----------|--------|----------|-----|
| $\Sigma$      | $\Pi$ | $\Delta$ | $\Phi$ | $\Gamma$ | ... |
| $\Lambda = 0$ | 1     | 2        | 3      | 4        | ... |

$\Lambda_1 \times \Lambda_2 = |\Lambda_1 - \Lambda_2| + (\Lambda_1 + \Lambda_2)$   
 $\Lambda \times \Lambda = \Sigma^+ + [\Sigma^-] + (2\Lambda)$ .