Coupling Coefficients

April 18, 2022

$egin{array}{ccccc} {f Contents} & & & {f 2} & & {f 2} & & & {f 2} & & & {f 2} & & {f 2} & & & {f 2} & & {\bf 2} & & {$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	14.7 $B_1 \times B_1$ 5 14.8 $B_1 \times A_2$ 5 14.9 $B_1 \times B_2$ 5 14.10 $B_1 \times E$ 5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$9.14 B \times E^1 \qquad \qquad \qquad 3$ $9.15 B \times E^2 \qquad \qquad \qquad 3$ $9.16 B \times B \qquad \qquad \qquad 3$ 10 Group $S_4 \qquad \qquad \qquad 3$ $10.1 A \times A \qquad \qquad \qquad 3$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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7.12 $B_1 \times A_2$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
8 Group D_{2h} 2 8.1 $A_{1g} \times A_{1g}$ 2 8.2 $A_{1g} \times B_{3u}$ 2 8.3 $A_{1g} \times B_{1u}$ 2 8.4 $A_{1g} \times B_{2u}$ 2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$
8.5 $A_{1g} \times A_{1u}$ 2 8.6 $A_{1g} \times B_{3g}$ 2 8.7 $A_{1g} \times B_{1g}$ 2 8.8 $A_{1g} \times B_{2g}$ 2 8.9 $B_{3u} \times A_{1g}$ 2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8.10 $B_{3u} \times B_{3u}$ 2 8.11 $B_{3u} \times B_{1u}$ 2 8.12 $B_{3u} \times B_{2u}$ 2 8.13 $B_{3u} \times A_{1u}$ 2 8.14 $B_{3u} \times B_{3g}$ 2 8.15 $B_{3u} \times B_{1q}$ 2	11.61 $\Gamma^8 \times \Gamma^5$ 4 11.62 $\Gamma^8 \times \Gamma^6$ 4 11.63 $\Gamma^8 \times \Gamma^7$ 4 11.64 $\Gamma^8 \times \Gamma^8$ 4	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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8.21 $B_{1u} \times A_{1u}$ 2 8.22 $B_{1u} \times B_{3g}$ 2 8.23 $B_{1u} \times B_{1g}$ 2 8.24 $B_{1u} \times B_{2g}$ 2 8.25 $B_{2u} \times A_{1g}$ 2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8.26 $B_{2u} \times B_{3u}$ 2 8.27 $B_{2u} \times B_{1u}$ 2 8.28 $B_{2u} \times B_{2u}$ 2 8.29 $B_{2u} \times A_{1u}$ 2 8.30 $B_{2u} \times B_{3g}$ 2 8.31 $B_{2u} \times B_{1g}$ 3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8.32 $B_{2u} \times B_{2g}$ 3 8.33 $A_{1u} \times A_{1g}$ 3 8.34 $A_{1u} \times B_{3u}$ 3 8.35 $A_{1u} \times B_{1u}$ 3 8.36 $A_{1u} \times B_{2u}$ 3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8.37 $A_{1u} \times A_{1u}$ 3 8.38 $A_{1u} \times B_{3g}$ 3 8.39 $A_{1u} \times B_{1g}$ 3 8.40 $A_{1u} \times B_{2g}$ 3 8.41 $B_{3g} \times A_{1g}$ 3 8.42 $B_{3g} \times B_{3u}$ 3	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$
8.43 $B_{3g} \times B_{1u}$ 3 8.44 $B_{3g} \times B_{2u}$ 3 8.45 $B_{3g} \times A_{1u}$ 3 8.46 $B_{3g} \times B_{3g}$ 3 8.47 $B_{3g} \times B_{1g}$ 3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$15.99 E_g imes E_u imes 6 \ 15.100 E_g imes E_g imes 6 \ $ $16 ext{ Group } C_3 ext{ 6} \ $ $16.1 ext{ } A imes A imes ext{ } ext{ } $	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8.48 $B_{3g} \times B_{2g}$ 3 8.49 $B_{1g} \times A_{1g}$ 3 8.50 $B_{1g} \times B_{3u}$ 3 8.51 $B_{1g} \times B_{1u}$ 3 8.52 $B_{1g} \times B_{2u}$ 3 8.53 $B_{1g} \times A_{1u}$ 3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8.54 $B_{1g} \times B_{3g}$ 3 8.55 $B_{1g} \times B_{1g}$ 3 8.56 $B_{1g} \times B_{2g}$ 3 8.57 $B_{2g} \times A_{1g}$ 3 8.58 $B_{2g} \times B_{3u}$ 3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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$8.64 \qquad B_{2g} \times B_{2g} \dots \qquad \qquad \qquad 3$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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$22.36 E^{'1} \times E^{'1} $	$24.14 B_2 \times B_1 . . 10$	$27.62 B_{1u} \times A_{2u} \dots \dots$	29.60 $T_u \times E_u^2$
23 Group C_{6h} 8 23.1 $\Gamma^1 \times \Gamma^1$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	29.64 $T_u \times T_u$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{lllll} 27.69 & B_{1u} \times E_{2g} & \dots & & 11 \\ 27.70 & B_{1u} \times E_{1u} & \dots & & 11 \\ 27.71 & B_{1u} \times E_{1g} & \dots & & & 11 \end{array} $	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.72 $B_{1u} \times E_{2u} \dots \dots$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$30.12 E \times A_2 $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$30.15 E \times T_2 $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$30.18 T_1 \times E \dots 14$ $30.19 T_1 \times T_1 \dots 14$
$23.25 \qquad \Gamma^3 \times \Gamma^1 \qquad . \qquad $	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	30.20 $T_1 \times T_2$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$30.23 T_2 \times E \dots 14$ $30.24 T_2 \times T_1 14$ $30.25 T_2 \times T_2 14$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$27.94 A_{2g} \times E_{1u} \dots 12$ $27.95 A_{2g} \times E_{1g} \dots 12$	31 Group T_d 14 $31.1 A_1 \times A_1 \dots \dots$
$23.33 \Gamma^3 \times \Gamma^9 8$ $23.34 \Gamma^3 \times \Gamma^{10} 8$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.97 $E_{2g} \times A_{1g}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	31.7 $A_2 \times A_2 \dots 14$ 31.8 $A_2 \times E \dots 14$ 31.9 $A_2 \times T_2 \dots 14$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$23.44 \Gamma^4 \times \Gamma^8 8$ $23.45 \Gamma^4 \times \Gamma^9 8$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.108 $E_{2g} \times E_{2u}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$31.15 E \times T_1 \dots 14$ $31.16 T_2 \times A_1 \dots 14$ $31.17 T_2 \times A_2 \dots 14$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	27.116 $E_{1u} \times A_{2g}$	$31.21 T_1 \times A_1 $
$23.55 \Gamma^5 \times \Gamma^7 8$ $23.56 \Gamma^5 \times \Gamma^8 8$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	32 Group O_h 15 $32.1 A_{1g} \times A_{1g} \dots \dots 15$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.127 $E_{1g} \times B_{2u} \dots 12$ 27.128 $E_{1g} \times A_{2g} \dots 12$	$ \begin{array}{lllll} 32.5 & A_{1g} \times E_u & \dots & 15 \\ 32.6 & A_{1g} \times E_g & \dots & 15 \end{array} $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$32.10 A_{1g} \times T_{2u} $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.138 $E_{2u} \times B_{1u} \dots 12$ 27.139 $E_{2u} \times B_{2u} \dots 12$	$ 32.16 A_{2u} \times E_g $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	32.21 $A_{1u} \times A_{1g}$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	28 Group T 12 28.1 $A \times A$ 12 28.2 $A \times E^1$ 12	$32.24 A_{1u} \times A_{2g} \dots 15$ $32.25 A_{1u} \times E_{u} \dots 15$ $32.26 A_{1u} \times E_{g} \dots 15$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$26.25 E' imes A'_1 ext{$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$26.28 E' imes A_2^{r} ext{$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$26.31 E^{"} \times A_{1}^{'} \dots \dots$	28.9 $E^2 \times A$	32.32 $A_{2g} \times A_{2u}$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$26.36 E^{"} imes E^{"} imes \dots \dots 11$ 27 Group D_{6h} 11	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	29 Group T_h 13 $29.1 A_q \times A_q \dots \dots$	$32.40 A_{2g} \times T_{2u} $
$23.102 \Gamma^9 \times \Gamma^6 \dots 9$ $23.103 \Gamma^9 \times \Gamma^7 \dots 9$	$A_{1g} \times B_{1g} \dots \dots$	29.2 $A_g \times A_u = 13$ 29.3 $A_g \times E_u = 13$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.7 $A_{1g} \times B_{2u} \dots \dots$	29.5 $A_g \times E_g^2 \dots \dots 13$ 29.6 $A_g \times E_g^1 \dots 13$	$32.46 E_u \times E_g $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
23.113 $\Gamma^{10} \times \Gamma^{5}$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.18 $A_{2u} \times B_{1u} \dots \dots$	29.16 $A_u \times T_u$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$32.65 T_{1g} \times E_{u} $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$27.29 A_{1u} \times B_{2g} $	29.27 $E_u^{\bar{2}} \times E_u^1 \dots 13$ 29.28 $E_u^2 \times E_u^2 \dots 13$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.40 $B_{1g} \times B_{1g} \dots \dots$	29.38 $E_g^{\frac{3}{2}} \times E_g^{\frac{3}{4}} \dots 13$ 29.39 $E_g^{\frac{2}{2}} \times T_g \dots 13$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$32.82 T_{1u} \times A_{2u} $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$32.87 T_{1u} \times T_{1g} $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27.51 $B_{2g} \times A_{1u} \dots \dots$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	32.90 $T_{1u} \times T_{2u}$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$32.95 T_{2u} \times E_u $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\mathcal{L}_{110} = \mathcal{L}_{2} \wedge \mathcal{H}_{1} \dots \dots$	$ u_{1u} \wedge u_{1g} \dots \dots$		$12u \wedge 12u \wedge 12u \dots \dots$

Group C_1

1.1 $A \times A$ $\begin{array}{c|cc}
A & A & \alpha \\
\hline
\alpha & \alpha & 1
\end{array}$

Group C_i

2.1 $A_g \times A_g$

$$\begin{array}{c|c} A_g & A_g & \alpha_g \\ \hline \alpha_g & \alpha_g & 1 \end{array}$$

 $2.2 \quad A_g \times A_u$

$$\begin{array}{c|cc}
A_g & A_u & \alpha_u \\
\hline
\alpha_g & \alpha_u & 1
\end{array}$$

 $2.3 \quad A_u \times A_g$

$$\begin{array}{c|cc}
A_u & A_g & \alpha_u \\
\hline
\alpha_u & \alpha_g & 1
\end{array}$$

2.4 $A_u \times A_u$

$$\begin{array}{c|c} A_u & A_u & A_g \\ \hline \alpha_u & \alpha_u & 1 \end{array}$$

Group C_2

3.1 $A \times A$

$$\begin{array}{c|cc}
A & A & \alpha \\
\hline
\alpha & \alpha & 1
\end{array}$$

 $\textbf{3.2} \quad A \times B$

$$\begin{array}{c|cc}
A & B & \beta \\
\hline
\alpha & \beta & 1
\end{array}$$

3.3 $B \times A$

$$\begin{array}{c|c}
B & A & \beta \\
\hline
\beta & \alpha & 1
\end{array}$$

3.4 $B \times B$

$$\begin{array}{c|c}
B & B & \alpha \\
\hline
\beta & \beta & 1
\end{array}$$

Group C_s

4.1 $A' \times A'$

$$\begin{array}{c|cccc} A' & A' & \alpha \\ \hline \alpha & \alpha & 1 \end{array}$$

4.2 $A' \times A''$

$$A' \quad A'' \quad \beta$$

 $4.3 \quad A'' \times A'$

$$\begin{array}{c|cc}
A'' & A' & \beta' \\
\hline
\beta & \alpha & 1
\end{array}$$

 $\textbf{4.4} \quad A^{"} \times A^{"}$

$$\begin{array}{c|cc}
A'' & A'' & \alpha \\
\hline
\beta & \beta & 1
\end{array}$$

Group C_{2h}

 $5.1 \quad A_g \times A_g$

$$A_g$$
 A_g A_g

5.2 $A_g \times B_u$

$$\begin{array}{c|cc}
A_g & B_u & \beta_u \\
\hline
\alpha_g & \beta_u & 1
\end{array}$$

5.3 $\quad A_g \times A_u$

 $5.4 \quad A_g \times B_g$

$$\begin{array}{c|c}
A_g & B_g & \beta_g \\
\hline
\alpha_g & \beta_g & 1
\end{array}$$

 $5.5 \quad B_u \times A_g$

$$\begin{array}{c|c} B_u & A_g & \beta_u \\ \hline \beta_u & \alpha_g & 1 \end{array}$$

5.6 $B_u \times B_u$

$$\begin{array}{c|cc} B_u & B_u & \alpha_g \\ \hline \beta_u & \beta_u & 1 \end{array}$$

$$\begin{array}{cccc}
\mathbf{5.7} & B_u \times A_u \\
B_u & A_u & \beta_g \\
\hline
\end{array}$$

5.8 $B_u \times B_g$

$$\begin{array}{c|cc} B_u & B_g & A_u \\ \hline \beta_u & \beta_g & 1 \end{array}$$

5.9 $\quad A_u \times A_g$

$$\begin{array}{c|cc}
A_u & A_g & A_u \\
\hline
\alpha_u & \alpha_g & 1
\end{array}$$

5.10 $A_u \times B_u$

$$\begin{array}{c|cc}
A_u & B_u & B_g \\
\hline
\alpha_u & \beta_u & 1
\end{array}$$

5.11 $A_u \times A_u$

$$\begin{array}{c|cccc}
A_u & A_u & A_g \\
\hline
\alpha_u & \alpha_u & 1
\end{array}$$

5.12 $A_u \times B_g$

$$\begin{array}{c|cc}
A_u & B_g & B_u \\
\hline
\alpha_u & \beta_g & 1
\end{array}$$

 $5.13 \quad B_g \times A_g$

$$\begin{array}{c|c}
B_g & A_g & \beta_g \\
\hline
\beta_g & \alpha_g & 1
\end{array}$$

5.14 $B_g \times B_u$

$$\frac{B_g \quad B_u \mid \alpha_u}{\beta_g \quad \beta_u \mid 1}$$

 $5.15 \quad B_g \times A_u$

$$\begin{array}{c|c}
B_g & A_u & \beta_u \\
\beta_g & \alpha_u & 1
\end{array}$$

5.16 $B_g \times B_g$

$$\begin{array}{c|cc}
B_g & B_g & \alpha_g \\
\hline
\beta_g & \beta_g & 1
\end{array}$$

Group D_2

6.1 $A_1 \times A_1$

$$\begin{array}{c|cc}
A_1 & A_1 & \alpha \\
\hline
\alpha & \alpha & 1
\end{array}$$

6.2 $A_1 \times B_1$

$$\begin{array}{c|cc} A_1 & B_1 & B_1 \\ \hline \alpha & \beta & 1 \end{array}$$

6.3 $A_1 \times B_2$

$$\begin{array}{c|c} A_1 & B_2 & \gamma \\ \hline \alpha & \gamma & 1 \end{array}$$

6.4 $A_1 \times B_3$

$$\begin{array}{c|cc} A_1 & B_3 & \zeta \\ \hline \alpha & \zeta & 1 \end{array}$$

6.5 $B_1 \times A_1$

$$\begin{array}{c|cc}
B_1 & A_1 & \beta \\
\hline
\beta & \alpha & 1
\end{array}$$

6.6 $B_1 \times B_1$

$$\begin{array}{c|cc} B_1 & B_1 & \alpha \\ \hline \beta & \beta & 1 \end{array}$$

6.7 $B_1 \times B_2$

$$B_1$$
 B_2 C

6.8 $B_1 \times B_3$

$$\begin{array}{c|c} B_1 & B_3 & \gamma \\ \hline \beta & \zeta & 1 \end{array}$$

6.9
$$B_2 \times A_1$$

$$B_2 \quad A_1 \mid_{\gamma}^{B_2}$$

$$\begin{array}{c|cccc}
\hline
\gamma & \alpha & 1
\end{array}$$
6.10 $B_2 \times B_1$

$$\begin{array}{c|cccc} B_2 & B_1 & \zeta \\ \hline \gamma & \beta & 1 \end{array}$$

6.11 $B_2 \times B_2$

$$\begin{array}{c|cc} B_2 & B_2 & A_1 \\ \hline \gamma & \gamma & 1 \end{array}$$

$$\begin{array}{c|cc}
B_2 & B_3 & \beta \\
\hline
\gamma & \zeta & 1
\end{array}$$

6.13
$$B_3 \times A_1$$

$$\begin{array}{c|c} B_3 & A_1 & \zeta \\ \hline \zeta & \alpha & 1 \end{array}$$

6.14 $B_3 \times B_1$

$$\begin{array}{c|cccc}
B_3 & B_1 & \gamma \\
\hline
\zeta & \beta & 1
\end{array}$$

6.15 $B_3 \times B_2$

$$\begin{array}{c|cc}
B_3 & B_2 & \beta \\
\hline
\zeta & \gamma & 1
\end{array}$$

6.16 $B_3 \times B_3$

$$\begin{array}{c|cc}
B_3 & B_3 & \alpha \\
\hline
\zeta & \zeta & 1
\end{array}$$

Group C_{2v}

7.1 $A_1 \times A_1$

$$\begin{array}{c|cc} A_1 & A_1 & \alpha \\ \hline \alpha & \alpha & 1 \end{array}$$

7.2 $A_1 \times B_2$

$$\begin{array}{c|cc}
A_1 & B_2 & \zeta \\
\hline
\alpha & \zeta & 1
\end{array}$$

7.3 $A_1 \times B_1$

7.4
$$A_1 \times A_2$$

$$\begin{array}{c|c} A_1 & A_2 & \beta \\ \hline \alpha & \beta & 1 \end{array}$$

7.5 $B_2 \times A_1$

$$\begin{array}{c|cc}
B_2 & A_1 & \zeta \\
\hline
\zeta & \alpha & 1
\end{array}$$

7.6 $B_2 \times B_2$

$$\begin{array}{c|cc} B_2 & B_2 & \alpha \\ \hline \zeta & \zeta & 1 \end{array}$$

7.7 $B_2 \times B_1$

$$\begin{array}{c|cc}
B_2 & B_1 & \beta \\
\hline
\zeta & \gamma & 1
\end{array}$$

7.8 $B_2 \times A_2$

$$\begin{array}{c|c} B_2 & A_2 & \beta \\ \hline \zeta & \beta & 1 \end{array}$$

7.9 $B_1 \times A_1$

$$\begin{array}{c|ccccc}
B_1 & A_1 & \beta_1 \\
\hline
\gamma & \alpha & 1
\end{array}$$

7.10 $B_1 \times B_2$ $\begin{array}{c|cc}
B_1 & B_2 & \beta \\
\hline
\gamma & \zeta & 1
\end{array}$

7.11
$$B_1 \times B_1$$

 $\begin{array}{c|cc} B_1 & B_1 & \alpha \\ \hline \gamma & \gamma & 1 \end{array}$

7.12
$$B_1 \times A_2$$

$$B_1 \quad A_2 \mid_{\zeta}^{B_2}$$

7.13
$$A_2 \times A_1$$

$$\begin{array}{c|c} A_2 & A_1 & \beta \\ \hline \beta & \alpha & 1 \end{array}$$

7.14 $A_2 \times B_2$

$$\begin{array}{c|c} A_2 & B_2 & \beta \\ \hline \beta & \zeta & 1 \end{array}$$

7.15 $A_2 \times B_1$

7.16 $A_2 \times A_2$

$$\begin{array}{c|c} A_2 & A_2 & \alpha \\ \hline \beta & \beta & 1 \end{array}$$

Group D_{2h}

8.1 $A_{1g} \times A_{1g}$

$$\begin{array}{c|cc}
A_{1g} & A_{1g} & \alpha_g \\
\hline
\alpha_g & \alpha_g & 1
\end{array}$$

8.2 $A_{1g} \times B_{3u}$

8.3 $A_{1g} \times B_{1u}$

$$\begin{array}{c|cc}
B.3 & A_{1g} \times B_1 \\
\hline
A_{1g} & B_{1u} & \beta_u \\
\hline
\alpha_g & \beta_u & 1
\end{array}$$

8.4
$$A_{1g} \times B_{2u}$$

$$A_{1g} \times B_{2u} \begin{vmatrix} B_{2u} \\ \gamma_u \end{vmatrix}$$

$$\alpha_g \quad \gamma_u \mid 1$$

8.5
$$A_{1g} \times A_{1u}$$

$$A_{1g} \times A_{1u} \begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix}$$

$$\alpha_g \quad \alpha_u \mid 1$$

8.6 $A_{1g} \times B_{3g}$

$$\begin{array}{c|c}
A_{1g} & B_{3g} & \zeta_g \\
\hline
\alpha_g & \zeta_g & 1
\end{array}$$

8.7 $A_{1g} \times B_{1g}$

 $\begin{array}{c|cc}
A_{1g} & B_{1g} & B_{1g} \\
\hline
\alpha_g & \beta_g & 1
\end{array}$

8.8 $A_{1g} \times B_{2g}$ $\begin{array}{c|c} A_{1g} & B_{2g} \\ \hline A_{0g} & B_{2g} & \gamma_{g} \\ \hline \alpha_{g} & \gamma_{g} & 1 \\ \end{array}$

8.9 $B_{3u} \times A_{1g}$

$$\begin{array}{c|c}
B_{3u} & A_{1g} & \zeta_u \\
\hline
\zeta_u & \alpha_g & 1
\end{array}$$

8.10 $B_{3u} \times B_{3u}$

$$\begin{array}{c|cc} B_{3u} & B_{3u} & A_{1g} \\ \hline \zeta_u & \zeta_u & 1 \end{array}$$

8.11 $B_{3u} \times B_{1u}$

$$\begin{array}{c|cc} B_{3u} & B_{1u} & \beta_{2g} \\ \hline \zeta_u & \beta_u & 1 \end{array}$$

8.12 $B_{3u} \times B_{2u}$

$$\zeta_u \quad \gamma_u \mid 1$$
8.13 $B_{3u} \times A_{1u}$

$$\frac{B_{3u} \quad A_{1u} \mid B_{3g} \atop \zeta_g}{\zeta_u \quad \alpha_u \mid 1}$$
8.14
$$B_{3u} \times B_{3g}$$

8.15
$$B_{3u} \times B_{1g}$$

$$B_{3u} \times B_{1g} \begin{vmatrix} B_{2u} \\ \gamma_u \end{vmatrix}$$

8.16 $B_{3u} \times B_{2g}$

8.17
$$B_{1u} \times A_{1g}$$

 $\begin{array}{c|cc} B_{1u} & A_{1g} & B_{1u} \\ \hline \beta_u & \alpha_g & 1 \end{array}$ **8.18** $B_{1u} \times B_{3u}$

8.19 $B_{1u} \times B_{1u}$

8.20
$$B_{1u} \times B_{2u}$$

$$\begin{array}{c|c} B_{1u} & B_{2u} & \beta_{3g} \\ \hline \beta_u & \gamma_u & 1 \end{array}$$

8.21 $B_{1u} \times A_{1u}$

$$\begin{array}{c|cc}
B_{1u} & A_{1u} & B_{1g} \\
\hline
\beta_u & \alpha_u & 1
\end{array}$$

8.22 $B_{1u} \times B_{3g}$

8.23
$$B_{1u} \times B_{1g}$$

$$B_{1u} \times B_{1g} \begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix}$$

8.24 $B_{1u} \times B_{2g}$

8.25
$$B_{2u} \times A_{1g}$$

$$B_{2u} \times A_{1g} \begin{vmatrix} B_{2u} \\ \gamma_u \end{vmatrix}$$

8.26 $B_{2u} \times B_{3u}$

8.27
$$B_{2u} \times B_{1u}$$

$$\begin{array}{c|c} B_{2u} & B_{1u} & \beta_{3g} \\ \hline \gamma_u & \beta_u & 1 \end{array}$$

8.28 $B_{2u} \times B_{2u}$

$$\begin{array}{c|cc}
B_{2u} & B_{2u} & A_{1g} \\
\hline
\gamma_u & \gamma_u & 1
\end{array}$$

8.29 $B_{2u} \times A_{1u}$

$$\begin{array}{c|cc}
B_{2u} & A_{1u} & \beta_{2g} \\
\hline
\gamma_u & \alpha_u & 1
\end{array}$$

8.30 $B_{2u} \times B_{3g}$

$$\begin{array}{c|cc}
B_{2u} & B_{3g} & B_{1u} \\
\hline
\gamma_u & \zeta_g & 1
\end{array}$$

8.31	$B_{2u} \times B_{1g}$	8.55 $B_{1g} \times B_{1g}$	9.14 $B \times E^1$	11.5 $\Gamma^1 imes \Gamma^5$
B_{2u}	$ \begin{array}{c c} B_{1g} & B_{3u} \\ \hline \beta_g & 1 \end{array} $	$egin{array}{c c} B_{1g} & B_{1g} & A_{1g} \ \hline eta_g & eta_g & 1 \end{array}$	$egin{array}{c c c} B & E^1 & E^2 \ \hline eta & \gamma & 1 \ \hline \end{array}$	$egin{array}{c c} \Gamma^1 & \Gamma^5 & \Gamma^5 \ \hline \gamma_1 & \gamma_5 & 1 \ \hline \end{array}$
	$B_{2u} \times B_{2g}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccc} \gamma_1 & \gamma_5 & \Gamma & & & & & & & & & & & & & & & & & $
	$ \begin{array}{c c} & A_{1u} \\ & A_{2g} & \alpha_{u} \\ \hline & \gamma_{g} & 1 \end{array} $		$egin{array}{c c} B & E^2 & E^1 \ \hline eta & \zeta & 1 \ \hline \end{array}$	$egin{array}{c c} \Gamma^1 & \Gamma^6 & \Gamma^6 \ \hline \gamma_1 & \gamma_6 & 1 \ \hline \end{array}$
		$\begin{array}{c c} B_{1g} & B_{2g} & \beta_{3g} \\ \hline \beta_g & \gamma_g & 1 \end{array}$		
	$A_{1u} \times A_{1g}$ $A_{1u} \times A_{1g}$	8.57 $B_{2g} \times A_{1g}$	9.16 $B \times B$	11.7 $\Gamma^1 \times \Gamma^7$
$\frac{A_{1u}}{\alpha_u}$	$ \begin{array}{c c} A_{1u} & A_{1u} \\ \hline A_{1g} & \alpha_{u} \\ \hline \alpha_{g} & 1 \end{array} $	$egin{array}{c c} B_{2g} & A_{1g} & B_{2g} \ \hline \gamma_g & lpha_g & 1 \end{array}$	$egin{array}{c c} B & B & \alpha \ \hline eta & eta & 1 \ \hline \end{array}$	$egin{array}{c c} \Gamma^1 & \Gamma^7 & \Gamma^7 \\ \hline \gamma_1 & \gamma_7 & 1 \end{array}$
	$A_{1u} \times B_{3u}$	8.58 $B_{2g} \times B_{3u}$	10 Group S_4	11.8 $\Gamma^1 \times \Gamma^8$
A_{1u}	$ \begin{array}{c c} B_{3g} \\ B_{3u} & \zeta_g \\ \hline \zeta_u & 1 \end{array} $	$\begin{array}{c cc} B_{2g} & B_{3u} & B_{1u} \\ \hline \gamma_g & \zeta_u & 1 \end{array}$	10.1 $A \times A$	$\begin{array}{c cccc} \Gamma^1 & \Gamma^8 & \Gamma^8 \\ \hline \gamma_1 & \gamma_8 & 1 \end{array}$
	$A_{1u} \times B_{1u}$		$egin{array}{c c} A & A & A & \alpha \ \hline lpha & lpha & 1 \ \hline \end{array}$	11.9 $\Gamma^2 imes \Gamma^1$
	$ \begin{array}{c c} B_{1u} & B_{1g} \\ B_{1u} & \beta_g \end{array} $ $ \beta_u & 1 $	8.59 $B_{2g} \times B_{1u}$ $B_{2g} \times B_{1u}$	$egin{array}{cccc} lpha & lpha & 1 \ & & & & & & & & & & & & & & & & &$	$\begin{array}{c cc} \Gamma^2 & \Gamma^1 & \Gamma^2 \\ \hline \gamma_2 & \gamma_1 & 1 \end{array}$
		$ \begin{array}{c cc} B_{2g} & B_{1u} & \zeta_u \\ \hline \gamma_g & \beta_u & 1 \end{array} $		
	$A_{1u} \times B_{2u}$ $\begin{vmatrix} B_{2g} \end{vmatrix}$	8.60 $B_{2g} \times B_{2u}$	$\begin{array}{c cccc} A & E^1 & E^1 \\ \hline \alpha & \gamma & 1 \end{array}$	11.10 $\Gamma^2 \times \Gamma^2$
$\frac{A_{1u}}{\alpha_u}$	$ \begin{array}{c c} B_{2u} & B_{2g} \\ \hline \gamma_g & 1 \end{array} $	$egin{array}{c c} B_{2g} & B_{2u} & A_{1u} \ \hline \gamma_g & \gamma_u & 1 \end{array}$	10.3 $A \times E^2$	$\begin{array}{c cccc} \Gamma^2 & \Gamma^2 & \Gamma^8 \\ \hline \gamma_2 & \gamma_2 & 1 \end{array}$
	$A_{1u} \times A_{1u}$	8.61 $B_{2g} \times A_{1u}$	$\begin{array}{c cccc} A & E^2 & E^2 \\ \hline \alpha & \zeta & 1 \end{array}$	11.11 $\Gamma^2 \times \Gamma^3$
$\frac{A_{1u}}{\alpha_u}$	$ \begin{array}{c c} A_{1u} & A_{1g} \\ A_{0g} & \\ \hline \alpha_{0} & 1 \end{array} $	$\begin{array}{c c} B_{2g} & A_{1u} & B_{2u} \\ \hline \gamma_g & \alpha_u & 1 \end{array}$	10.4 $A \times B$	$egin{array}{c cccc} \Gamma^2 & \Gamma^3 & \Gamma^1 \ \hline \gamma_2 & \gamma_3 & 1 \end{array}$
	$A_{1u} \times B_{3g}$		$\begin{array}{c c} A & B & B \\ \hline \alpha & \beta & 1 \end{array}$	11.12 $\Gamma^2 \times \Gamma^4$
A_{1u}	$ \begin{array}{c c} B_{3g} & B_{3u} \\ \hline \zeta_u & \\ \hline \zeta_g & 1 \end{array} $	8.62 $B_{2g} \times B_{3g}$	$10.5 E^1 \times A$	$egin{array}{c c} \Gamma^2 & \Gamma^4 & \Gamma^7 \ \hline \gamma_2 & \gamma_4 & 1 \end{array}$
		$egin{array}{c c} B_{2g} & B_{3g} & B_{1g} \ \hline \gamma_g & \zeta_g & 1 \end{array}$	$egin{array}{c c c} E^1 & A & E^1 \ \hline \gamma & lpha & 1 \ \hline \end{array}$	γ_2 $\gamma_4 \mid 1$ 11.13 $\Gamma^2 imes \Gamma^5$
	$A_{1u} \times B_{1g}$ $\begin{vmatrix} B_{1u} \\ \beta \end{vmatrix}$	8.63 $B_{2g} \times B_{1g}$		
$\frac{A_{1u}}{\alpha_u}$	$ \begin{array}{c c} B_{1g} & B_{1u} \\ B_{g} & \beta_{u} \end{array} $	$egin{array}{c c} B_{2g} & B_{1g} & B_{3g} \ \hline \gamma_g & eta_g & 1 \end{array}$	10.6 $E^1 \times E^1$	$\begin{array}{c cccc} \Gamma^2 & \Gamma^5 & \Gamma^6 \\ \hline \gamma_2 & \gamma_5 & 1 \end{array}$
	$A_{1u} \times B_{2g}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{c c} E^1 & E^1 & B \ \hline \gamma & \gamma & 1 \end{array}$	11.14 $\Gamma^2 \times \Gamma^6$
$\frac{A_{1u}}{\alpha_u}$	$ \begin{array}{c c} B_{2g} & B_{2u} \\ \hline \gamma_u & \\ \hline \gamma_g & 1 \end{array} $	$egin{array}{c c} B_{2g} & B_{2g} & A_{1g} \ \hline \gamma_g & \gamma_g & 1 \end{array}$	10.7 $E^1 \times E^2$	$\begin{array}{c cccc} \Gamma^2 & \Gamma^6 & \Gamma^4 \\ \hline \gamma_2 & \gamma_6 & 1 \end{array}$
	$B_{3g} \times A_{1g}$	$\gamma_g \gamma_g \mid 1$	$egin{array}{c c} E^1 & E^2 & A \ \hline \gamma & \zeta & 1 \ \hline \end{array}$	11.15 $\Gamma^2 \times \Gamma^7$
B_{3g}	$ \begin{array}{c c} & B_{3g} \\ A_{1g} & \zeta_g \\ \hline & \alpha_g & 1 \end{array} $	9 Group C_4	10.8 $E^1 \times B$	$egin{array}{c cccc} \Gamma^2 & \Gamma^7 & \Gamma^5 \ \hline \gamma_2 & \gamma_7 & 1 \end{array}$
	$\alpha_g \mid 1$ $B_{3g} \times B_{3u}$	$9.1 A \times A$	$egin{array}{c c} E^1 & B & E^2 \\hline \gamma & eta & 1 \\hline \end{array}$	γ_2 $\gamma_7 \mid 1$ 11.16 $\Gamma^2 \times \Gamma^8$
		$\begin{array}{c cccc} A & A & \alpha \\ \hline \alpha & \alpha & 1 \end{array}$		$egin{array}{c ccccccccccccccccccccccccccccccccccc$
	$ \begin{array}{c c} & A_{1u} \\ B_{3u} & \alpha_u \\ \hline \zeta_u & 1 \end{array} $	9.2 $A \times E^1$	10.9 $E^2 \times A$	
	$B_{3g} \times B_{1u}$	$egin{array}{c c} A & E^1 & E^1 \\ \hline lpha & \gamma & 1 \end{array}$	$\begin{array}{c cc} E^2 & A & \zeta \\ \hline \zeta & \alpha & 1 \end{array}$	11.17 $\Gamma^3 \times \Gamma^1$
$\frac{B_{3g}}{\zeta_g}$	$ \begin{array}{c c} B_{1u} & B_{2u} \\ \hline \beta_u & 1 \end{array} $	$egin{array}{c c} lpha & \gamma & 1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	10.10 $E^2 \times E^1$	$\begin{array}{c cccc} \Gamma^3 & \Gamma^1 & \Gamma^3 \\ \hline \gamma_3 & \gamma_1 & 1 \end{array}$
	$B_{3g} \times B_{2u}$		$egin{array}{c c} E^2 & E^1 & A \ \hline \zeta & \gamma & 1 \ \hline \end{array}$	11.18 $\Gamma^3 \times \Gamma^2$
B_{3g}	$ \begin{array}{c c} B_{1u} & B_{1u} \\ B_{2u} & \beta_{u} \\ \hline \gamma_{u} & 1 \end{array} $	$\begin{array}{c cccc} A & E^2 & E^2 \\ \hline \alpha & \zeta & 1 \end{array}$	10.11 $E^2 \times E^2$	$\begin{array}{c cccc} \Gamma^3 & \Gamma^2 & \Gamma^1 \\ \hline \gamma_3 & \gamma_2 & 1 \end{array}$
	$B_{3g} \times A_{1u}$	$9.4 A \times B$	$\begin{array}{c cc} E^2 & E^2 & B \\ \hline \zeta & \zeta & 1 \end{array}$	11.19 $\Gamma^3 imes \Gamma^3$
	$ \begin{array}{c c} A_{1u} & B_{3u} \\ \hline A_{u} & \zeta_{u} \end{array} $	$egin{array}{c c} A & B & B \\ \hline lpha & eta & 1 \\ \hline \end{array}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c cccc} \Gamma^3 & \Gamma^3 & \Gamma^8 \\ \hline \gamma_3 & \gamma_3 & 1 \end{array}$
		9.5 $E^1 \times A$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
	$B_{3g} \times B_{3g}$	$egin{array}{c c c} E^1 & A & E^1 \ \hline \gamma & lpha & 1 \ \hline \end{array}$		11.20 $\Gamma^3 \times \Gamma^4$
$\frac{D_{3g}}{\zeta_g}$	$ \begin{array}{c c} & A_{1g} \\ & \alpha_g \\ \hline & \zeta_g & 1 \end{array} $	$egin{array}{cccc} \gamma & lpha & 1 \ \end{array}$ 9.6 $E^1 imes E^1$	10.13 $B \times A$	$ \begin{array}{c cccc} \Gamma^3 & \Gamma^4 & \Gamma^6 \\ \hline \gamma_3 & \gamma_4 & 1 \end{array} $
	$B_{3g} \times B_{1g}$	$egin{array}{c c} egin{array}{c c} E^1 & E^1 & B \ \hline \gamma & \gamma & 1 \end{array}$	$\begin{array}{c c} B & A & \beta \\ \hline \beta & \alpha & 1 \end{array}$	11.21 $\Gamma^3 \times \Gamma^5$
$\frac{B_{3g}}{\zeta_g}$	$ \begin{array}{c c} B_{1g} & B_{2g} \\ \hline \beta_g & 1 \end{array} $		10.14 $B \times E^1$	$egin{array}{c c} \Gamma^3 & \Gamma^5 & \Gamma^7 \ \hline \gamma_3 & \gamma_5 & 1 \end{array}$
	$B_{3g} \times B_{2g}$	9.7 $E^1 imes E^2$	$egin{array}{c c c} B & E^1 & E^2 \ \hline eta & \gamma & 1 \ \hline \end{array}$	11.22 $\Gamma^3 \times \Gamma^6$
B_{3g}	$ \begin{array}{c c} B_{1g} & B_{1g} \\ B_{g} & \beta_{g} \end{array} $	$egin{array}{c c} E^1 & E^2 & A \ \hline \gamma & \zeta & 1 \ \hline \end{array}$	10.15 $B \times E^2$	$egin{array}{c c} \Gamma^3 & \Gamma^6 & \Gamma^5 \ \hline \gamma_3 & \gamma_6 & 1 \ \hline \end{array}$
	$\gamma_g \mid 1$ $B_{1g} \times A_{1g}$	9.8 $E^1 \times B$	$egin{array}{c c} B & E^2 & E^1 \ \hline eta & \zeta & 1 \ \hline \end{array}$	γ_3 $\gamma_6 \mid 1$ $11.23 \Gamma^3 \times \Gamma^7$
	$ \begin{array}{c c} & Ig \\ \hline & B_{1g} \\ \hline & A_{1g} & \beta_g \\ \hline & \alpha_g & 1 \end{array} $	$\begin{array}{c cccc} E^1 & B & C^2 \\ \hline \gamma & \beta & 1 \end{array}$	eta ζ 1 10.16 $B \times B$	$\begin{array}{c cccc} \Gamma^3 & \Gamma^7 & \Gamma^4 \\ \hline \gamma_3 & \gamma_7 & 1 \end{array}$
		$egin{array}{cccccccccccccccccccccccccccccccccccc$		
	$B_{1g} \times B_{3u}$ $\mid B_{2u}$		$egin{array}{c c} B & B & A \ \hline eta & eta & 1 \ \hline eta & eta & 1 \ \hline \end{array}$	11.24 $\Gamma^3 \times \Gamma^8$
$\frac{B_{1g}}{\beta_g}$	$ \begin{array}{c c} B_{3u} & B_{2u} \\ \hline & \gamma_u \\ \hline & \zeta_u & 1 \end{array} $	$\begin{array}{c cccc} E^2 & A & \zeta \\ \hline \zeta & \alpha & 1 \end{array}$	11 Group C_{4h}	$ \begin{array}{c cccc} \Gamma^3 & \Gamma^8 & \Gamma^2 \\ \hline \gamma_3 & \gamma_8 & 1 \end{array} $
	$B_{1g} \times B_{1u}$	9.10 $E^2 \times E^1$	11.1 $\Gamma^1 \times \Gamma^1$	11.25 $\Gamma^4 \times \Gamma^1$
$\frac{B_{1g}}{\beta}$	$ \begin{array}{c c} & A_{1u} \\ B_{1u} & \alpha_u \\ \hline \beta_u & 1 \end{array} $	$egin{array}{c c} E^2 & E^1 & A & \ \hline \zeta & \gamma & 1 & \end{array}$	$egin{array}{c cccc} \Gamma^1 & \Gamma^1 & \Gamma^1 & \gamma_1 \ \hline \gamma_1 & \gamma_1 & 1 & \end{array}$	$\begin{array}{c cccc} \Gamma^4 & \Gamma^1 & \Gamma^4 \\ \hline \gamma_4 & \gamma_1 & 1 \end{array}$
	$B_{1g} \times B_{2u}$	9.11 $E^2 \times E^2$	11.2 $\Gamma^1 imes \Gamma^2$	11.26 $\Gamma^4 imes \Gamma^2$
	$ \begin{array}{c c} B_{3u} & B_{3u} \\ \hline \beta_{2u} & \zeta_{u} \\ \hline \gamma_{u} & 1 \end{array} $	$egin{array}{c c} E^2 & E^2 & \beta \ \hline \end{array}$	$egin{array}{c c} \Gamma^1 & \Gamma^2 & \Gamma^2 \\hline \gamma_1 & \gamma_2 & 1 \\hline \end{array}$	$\begin{array}{c cccc} \Gamma^4 & \Gamma^2 & \Gamma^7 \\ \hline \gamma_4 & \gamma_2 & 1 \end{array}$
		$ \begin{array}{c cccc} \hline \zeta & \zeta & 1 \\ \hline 9.12 & E^2 \times B \end{array} $		
	$B_{1g} \times A_{1u}$		11.3 $\Gamma^1 \times \Gamma^3$ $\Gamma^1 \Gamma^3 \Gamma^3$	11.27 $\Gamma^4 \times \Gamma^3$
$\frac{B_{1g}}{\beta_g}$	$ \begin{array}{c c} A_{1u} & B_{1u} \\ \hline A_{0u} & A_{0u} \end{array} $	$egin{array}{c c c} E^2 & B & E^1 \ \hline \zeta & eta & 1 \ \hline \end{array}$	$egin{array}{c c c} \Gamma^1 & \Gamma^3 & \Gamma^3 \\ \hline \gamma_1 & \gamma_3 & 1 \\ \hline \end{array}$	$\begin{array}{c cccc} \Gamma^4 & \Gamma^3 & \Gamma^6 \\ \hline \gamma_4 & \gamma_3 & 1 \end{array}$
	$B_{1g} \times B_{3g}$	9.13 $B \times A$	11.4 $\Gamma^1 imes \Gamma^4$	11.28 $\Gamma^4 \times \Gamma^4$
$\frac{B_{1g}}{\beta}$	$ \begin{array}{c c} B_{3g} & B_{2g} \\ \hline & \gamma_g \\ \hline & \zeta_g & 1 \end{array} $	$egin{array}{c c} B & A & B \ \hline eta & lpha & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^1 & \Gamma^4 & \Gamma^4 & \gamma_4 & & & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} \Gamma^4 & \Gamma^4 & \Gamma^1 & \gamma_1 & & & & & & & & & & & & & & & & & & &$
	***	ρ ω <u> </u> Ι	/1 /4 ÷	/4 /4 ±

11.29 $\Gamma^4 imes \Gamma^5$	$\textbf{11.53} \Gamma^7 \times \Gamma^5$	12.12 $B_2 \times A_2$	13.8 $A_2 \times B_2$
$\begin{array}{c c} \Gamma^4 & \Gamma^5 & \Gamma^8 \\ \hline \gamma_4 & \gamma_5 & 1 \end{array}$	$egin{array}{c c} \Gamma^7 & \Gamma^5 & \Gamma^3 \ \hline \gamma_7 & \gamma_5 & 1 \ \hline \end{array}$	$egin{array}{c c} B_2 & A_2 & B_1 \ \hline \zeta & eta & 1 \ \end{array}$	$egin{array}{c c} A_2 & B_2 & B_1 \ \hline eta & \zeta & 1 \ \end{array}$
$\gamma_4 \gamma_5 \mid 1$ 11.30 $\Gamma^4 imes \Gamma^6$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{c ccc} \zeta & eta & 1 \ & & & & & & & & & & & & & & & & &$	$eta = \zeta \mid 1$ 13.9 $A_2 \times B_1$
$egin{array}{c c} \Gamma^3 & \Gamma^3 \\ \hline \gamma_4 & \gamma_6 & 1 \end{array}$	$egin{array}{c c} \Gamma^7 & \Gamma^6 & \Gamma^1 \ \hline \gamma_7 & \gamma_6 & 1 \ \hline \end{array}$		$ \begin{array}{c cc} A_2 & B_1 & \beta \\ \hline A_2 & B_1 & \zeta \\ \hline \beta & \gamma & 1 \end{array} $
		$\begin{array}{c cc} B_2 & B_2 & A_1 \\ \hline \zeta & \zeta & 1 \end{array}$	$\frac{\beta}{\beta} = \frac{\gamma}{1} = \frac{1}{1}$
11.31 $\Gamma^4 \times \Gamma^7$	11.55 $\Gamma^7 \times \Gamma^7$	12.14 $B_2 \times B_1$ A_2	13.10 $A_2 \times E$
$\begin{array}{c cc} \Gamma^4 & \Gamma^7 & \Gamma^2 \\ \hline \gamma_4 & \gamma_7 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^7 & \Gamma^7 & \Gamma^8 \ \hline \gamma_7 & \gamma_7 & 1 \end{array}$	$\begin{array}{c cc} B_2 & B_1 & A_2 \\ \hline \zeta & \gamma & 1 \end{array}$	$egin{array}{c cccc} A_2 & E & E & \mu \ \hline eta & \eta & 0 & -1 \ eta & \mu & 1 & 0 \end{array}$
11.32 $\Gamma^4 imes \Gamma^8$	11.56 $\Gamma^7 \times \Gamma^8$	12.15 $B_2 \times E$	13.11 $B_2 \times A_1$
$egin{array}{c c c} \Gamma^4 & \Gamma^8 & \Gamma^5 \\ \hline \gamma_4 & \gamma_8 & 1 \end{array}$	$egin{array}{c c} \Gamma^7 & \Gamma^8 & \Gamma^6 \\ \hline \gamma_7 & \gamma_8 & 1 \end{array}$	$egin{array}{c cccc} B_2 & E & E & \mu & \mu \ \hline \zeta & \eta & 0 & 1 \ \zeta & \mu & 1 & 0 \ \hline \end{array}$	$\begin{array}{c c} B_2 & A_1 & \zeta \\ \hline \zeta & \alpha & 1 \end{array}$
11.33 $\Gamma^5 \times \Gamma^1$	11.57 $\Gamma^8 imes \Gamma^1$	$ \begin{array}{c ccccc} \zeta & \mu & 1 & 0 \\ 12.16 & B_1 \times A_1 \end{array} $	$egin{array}{c ccc} \zeta & \alpha & 1 \ & & & & & & & & & & & & & & & & &$
$egin{array}{c cccc} \Gamma^5 & \Gamma^1 & \Gamma^5 \ \hline \gamma_5 & \gamma_1 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^1 & \Gamma^8 \ \hline \gamma_8 & \gamma_1 & 1 \ \hline \end{array}$	$ \begin{array}{c c} & B_1 \times B_1 \\ \hline B_1 & A_1 & \gamma \\ \hline \gamma & \alpha & 1 \end{array} $	$\begin{array}{c c} B_2 & A_2 & \gamma \\ \hline \zeta & \beta & 1 \end{array}$
11.34 $\Gamma^5 \times \Gamma^2$	$oldsymbol{11.58} \Gamma^8 imes \Gamma^2$		
$egin{array}{c cccc} \Gamma^5 & \Gamma^2 & \Gamma^6 \ \hline \gamma_5 & \gamma_2 & 1 \end{array}$	$egin{array}{c c} \Gamma^8 & \Gamma^2 & \Gamma^3 \ \hline \gamma_8 & \gamma_2 & 1 \ \hline \end{array}$	$12.17 B_1 \times A_2$	13.13 $B_2 \times B_2$
11.35 $\Gamma^5 imes \Gamma^3$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c c} B_1 & A_2 & B_2 \\ \hline \hline \gamma & \beta & 1 \end{array}$	$\begin{array}{c cc} B_2 & B_2 & A_1 \\ \hline \zeta & \zeta & 1 \end{array}$
$egin{array}{c cccc} \Gamma^5 & \Gamma^3 & \Gamma^7 \ \hline \gamma_5 & \gamma_3 & 1 \end{array}$	$egin{array}{c c} \Gamma^8 & \Gamma^3 & \Gamma^2 \ \hline \gamma_8 & \gamma_3 & 1 \ \hline \end{array}$	12.18 $B_1 \times B_2$	13.14 $B_2 \times B_1$
γ_5 γ_3 1 γ_5 γ_3 1 γ_5 γ_5 γ_4	$egin{array}{c c} \gamma_8 & \gamma_3 & 1 \ \end{array}$ 11.60 $\Gamma^8 imes \Gamma^4$	$egin{array}{c c} B_1 & B_2 & A_2 \ \hline \gamma & \zeta & 1 \end{array}$	$\begin{array}{c cc} B_2 & B_1 & A_2 \\ \hline \zeta & \gamma & 1 \end{array}$
$\begin{array}{c cccc} \Gamma^5 & \Gamma^4 & \Gamma^8 \\ \hline \gamma_5 & \gamma_4 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^4 & \Gamma^5 \\ \hline \gamma_8 & \gamma_4 & 1 \\ \hline \end{array}$	12.19 $B_1 \times B_1$	13.15 $B_2 \times E$
$egin{array}{c cccc} \overline{\gamma_5} & \gamma_4 & 1 \end{array}$ $egin{array}{c cccc} 11.37 & \Gamma^5 imes \Gamma^5 \end{array}$		$egin{array}{c c c} B_1 & B_1 & A_1 \\ \hline \gamma & \gamma & 1 \end{array}$	$egin{array}{c c c} B_2 & E & E & \\ \hline eta & \mu & \mu \\ \hline eta & \eta & 0 & 1 \\ eta & \mu & 1 & 0 \\ \hline \end{array}$
	11.61 $\Gamma^8 imes \Gamma^5$	$egin{array}{ccc} egin{array}{ccc} \egin{array}{ccc} egin{array}{ccc} \egin{array}{ccc} arra$	
$egin{array}{c cccc} \Gamma^5 & \Gamma^5 & \Gamma^1 \\ \hline \gamma_5 & \gamma_5 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^5 & \Gamma^4 \ \hline \gamma_8 & \gamma_5 & 1 \ \hline \end{array}$		13.16 $B_1 \times A_1$
11.38 $\Gamma^5 imes \Gamma^6$	11.62 $\Gamma^8 imes \Gamma^6$	$\begin{array}{c cccc} B_1 & E & E & \\ \hline \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{array}$	$\begin{array}{c c} B_1 & A_1 & \beta_1 \\ \hline \gamma & \alpha & 1 \end{array}$
$\begin{array}{c c} \Gamma^5 & \Gamma^6 & \Gamma^2 \\ \hline \gamma_5 & \gamma_6 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^6 & \Gamma^7 \\ \hline \gamma_8 & \gamma_6 & 1 \end{array}$	12.21 $E \times A_1$	13.17 $B_1 \times A_2$
11.39 $\Gamma^5 imes \Gamma^7$	11.63 $\Gamma^8 \times \Gamma^7$	$egin{array}{c cccc} E & A_1 & \pi & \mu \ \hline \eta & lpha & 1 & 0 \ \hline \mu & lpha & 0 & 1 \ \hline \end{array}$	$egin{array}{c c} B_1 & A_2 & B_2 \ \hline \gamma & eta & 1 \ \end{array}$
$egin{array}{c cccc} \Gamma^5 & \Gamma^7 & \Gamma^3 \ \hline \gamma_5 & \gamma_7 & 1 \end{array}$	$egin{array}{c c} \Gamma^8 & \Gamma^7 & \Gamma^6 \ \hline \gamma_8 & \gamma_7 & 1 \ \hline \end{array}$	μ α \mid 0 \mid 1 12.22 $E \times A_2$	13.18 $B_1 \times B_2$
11.40 $\Gamma^5 \times \Gamma^8$	11.64 $\Gamma^8 \times \Gamma^8$		$\begin{array}{c c} B_1 & B_2 & A_2 \\ \hline \gamma & \zeta & 1 \end{array}$
$\begin{array}{c cccc} \Gamma^5 & \Gamma^8 & \Gamma^4 \\ \hline \gamma_5 & \gamma_8 & 1 \end{array}$	$egin{array}{c c} \Gamma^8 & \Gamma^8 & \Gamma^1 \ \hline \gamma_8 & \gamma_8 & 1 \ \hline \end{array}$	$\begin{array}{c cccc} E & A_2 & F & \\ \hline \eta & \beta & 0 & -1 \\ \hline \mu & \beta & 1 & 0 \\ \end{array}$	13.19 $B_1 \times B_1$
	2/2 2/2 1		
11.41 $\Gamma^6 \times \Gamma^1$		12.23 $E \times B_2$	B_1 B_1 α
	12 Group D_4	12.23 $E \times B_2$	$ \begin{array}{c c} B_1 & B_1 & A_1 \\ \hline \gamma & \gamma & 1 \end{array} $ $ \begin{array}{c c} 13.20 & B_1 \times E \end{array} $
$egin{array}{ccccc} egin{array}{ccccc} egin{array}{cccccccc} egin{array}{cccccccccc} \Gamma^6 & \Gamma^1 & \Gamma^6 & & & & & & & & & & & & & & & & & & &$	12 Group D_4 12.1 $A_1 \times A_1$		13.20 $B_1 \times E$
$egin{array}{c c} \Gamma^6 & \Gamma^1 & \Gamma^6 \ \hline \gamma_6 & \gamma_1 & 1 \ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \begin{array}{c c} A_1 & A_1 & \alpha \\ \hline \alpha & \alpha & 1 \end{array} $	12.23 $E \times B_2$ $ \begin{array}{c cccc} E & B_2 & \mu \\ \hline & \gamma & \zeta & 0 & 1 \\ \hline & \mu & \zeta & 1 & 0 \end{array} $ 12.24 $E \times B_1$	
$\begin{array}{c cccc} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1 A_1 \mid A_1 \alpha}{\alpha \alpha \mid 1}$ 12.2 $A_1 \times A_2$	12.23 $E \times B_2$ $ \frac{E B_2 \mid \stackrel{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & E \\ \hline & \eta & \mu \\ \hline & \gamma & \eta & 1 & 0 \\ & \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$
$egin{array}{c c} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \end{array}$ $egin{array}{c c} 11.42 & \Gamma^6 imes \Gamma^2 \\ \hline & \Gamma^6 & \Gamma^2 & \gamma_4 \\ \hline & \gamma_6 & \gamma_2 & 1 \end{array}$ $egin{array}{c c} 11.43 & \Gamma^6 imes \Gamma^3 \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \begin{array}{c c} A_1 & A_1 & \alpha \\ \hline & \alpha & \alpha & 1 \end{array} $ 12.2 $A_1 \times A_2$ $ \begin{array}{c c} A_1 & A_2 & \beta \\ \hline & \alpha & \beta & 1 \end{array} $	12.23 $E \times B_2$ $ \begin{array}{c cccc} E & B_2 & \mu \\ \hline \eta & \zeta & 0 & 1 \\ \hline \mu & \zeta & 1 & 0 \end{array} $ 12.24 $E \times B_1$ $ \begin{array}{c cccc} E & B_1 & \mu \\ \hline \eta & \gamma & 1 & 0 \\ \hline \mu & \gamma & 0 & -1 \end{array} $	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & E \\ \hline & \eta & \mu \\ \hline & \gamma & \eta & 1 & 0 \\ & \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$
$egin{array}{c c c c} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \end{array}$ $egin{array}{c c c} 11.42 & \Gamma^6 imes \Gamma^2 \end{array}$ $egin{array}{c c c} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \Gamma^2 & \gamma_4 \\ \hline \gamma_6 & \gamma_2 & 1 \end{array}$ $egin{array}{c c c} 11.43 & \Gamma^6 imes \Gamma^3 \\ \hline \Gamma^6 & \Gamma^3 & \gamma_5 \\ \hline \gamma_6 & \gamma_3 & 1 \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha} $ 12.2 $A_1 \times A_2$ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ 12.3 $A_1 \times B_2$	12.23 $E \times B_2$ $ \begin{array}{c cccc} E & B_2 & \mu \\ \hline \eta & \zeta & 0 & 1 \\ \hline \mu & \zeta & 1 & 0 \end{array} $ 12.24 $E \times B_1$ $ \begin{array}{c cccc} E & B_1 & \mu \\ \hline \eta & \gamma & 1 & 0 \\ \hline \mu & \gamma & 0 & -1 \end{array} $ 12.25 $E \times E$	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & E \\ \hline & \eta & \mu \\ \hline & \gamma & \eta & 1 & 0 \\ & \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$ $ \begin{array}{c cccc} E & A_1 & E \\ \hline & \eta & \mu \\ \hline & \eta & \alpha & 1 & 0 \\ \hline & \mu & \alpha & 0 & 1 \end{array} $
$ \frac{\Gamma^{6} \Gamma^{1} \mid \overset{\Gamma^{6}}{\gamma_{6}}}{\gamma_{6} \gamma_{1} \mid 1} $ $ 11.42 \Gamma^{6} \times \Gamma^{2} $ $ \frac{\Gamma^{6} \Gamma^{2} \mid \overset{\Gamma^{4}}{\gamma_{4}}}{\gamma_{6} \gamma_{2} \mid 1} $ $ 11.43 \Gamma^{6} \times \Gamma^{3} $ $ \frac{\Gamma^{6} \Gamma^{3} \mid \overset{\Gamma^{5}}{\gamma_{5}}}{\gamma_{6} \gamma_{3} \mid 1} $ $ 11.44 \Gamma^{6} \times \Gamma^{4} $	12 Group D_4 12.1 $A_1 \times A_1$ $ \begin{array}{c c} A_1 & A_1 & \alpha \\ \hline & \alpha & \alpha & 1 \end{array} $ 12.2 $A_1 \times A_2$ $ \begin{array}{c c} A_1 & A_2 & \beta \\ \hline & \alpha & \beta & 1 \end{array} $	12.23 $E \times B_2$ $ \frac{E B_2 \mid \frac{E}{\eta \mu}}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \mid \frac{E}{\eta \mu}}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}} $ 12.25 $E \times E$ $ \frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2}}{\eta \mu \mid 0 0 \frac{\sqrt{2}}{2}} \mid -\frac{\sqrt{2}}{2}} $	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & E & \mu \\ \hline & \gamma & \eta & 1 & 0 \\ & \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$ $ \begin{array}{c ccccc} E & A_1 & \mu & \mu \\ \hline & \eta & \alpha & 1 & 0 \\ \hline & \mu & \alpha & 0 & 1 \end{array} $ 13.22 $E \times A_2$
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array}$ $\begin{array}{c c} 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array}$ $\begin{array}{c c} 11.43 & \Gamma^{6} \times \Gamma^{3} \\ \hline 11.43 & \Gamma^{6} \times \Gamma^{3} \\ \hline \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} 11.44 & \Gamma^{6} \times \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{4} & \gamma_{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1 A_1 \frac{A_1}{\alpha}}{\alpha \alpha \ 1} $ 12.2 $A_1 \times A_2$ $ \frac{A_1 A_2 \frac{A_2}{\beta}}{\alpha \beta \ 1} $ 12.3 $A_1 \times B_2$ $ \frac{A_1 B_2 \frac{B_2}{\zeta}}{\alpha \zeta \ 1} $ 12.4 $A_1 \times B_1$	12.23 $E \times B_2$ $ \begin{array}{c cccc} E & B_2 & \mu \\ \hline \eta & \zeta & 0 & 1 \\ \hline \mu & \zeta & 1 & 0 \end{array} $ 12.24 $E \times B_1$ $ \begin{array}{c cccc} E & B_1 & \mu \\ \hline \eta & \gamma & 1 & 0 \\ \hline \mu & \gamma & 0 & -1 \end{array} $ 12.25 $E \times E$ $ \begin{array}{c cccc} E & E & A_1 & B_1 & B_2 & A_2 \\ \hline \rho & \gamma & \zeta & \beta \end{array} $	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & E & \mu \\ \hline & \gamma & \eta & 1 & 0 \\ & \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$ $ \begin{array}{c ccccc} E & A_1 & \mu & \mu \\ \hline & \eta & \alpha & 1 & 0 \\ \hline & \mu & \alpha & 0 & 1 \end{array} $ 13.22 $E \times A_2$
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array}$ $\begin{array}{c c} 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array}$ $\begin{array}{c c} 11.43 & \Gamma^{6} \times \Gamma^{3} \\ \hline \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} 11.44 & \Gamma^{6} \times \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{4} & \gamma_{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array}$ $\begin{array}{c c} 11.45 & \Gamma^{6} \times \Gamma^{5} \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \begin{array}{c c} A_1 & A_1 & A_1 \\ \hline A_1 & A_1 & \alpha \end{array} $ 12.2 $A_1 \times A_2$ $ \begin{array}{c c} A_1 & A_2 & A_2 \\ \hline A_1 & A_2 & \beta \end{array} $ 12.3 $A_1 \times B_2$ $ \begin{array}{c c} A_1 & B_2 & \zeta \hline \alpha & \zeta & 1 \end{array} $	12.23 $E \times B_2$ $ \frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \mid \frac{E}{\eta \mu}}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}} $ 12.25 $E \times E$ $ \frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\beta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2}}{2} \mid -\frac{\sqrt{2}}{2}} \mid 0 \mid 0 0 0 \frac{\eta \mu \mid 0 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2}}} $	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & E \\ \hline & \eta & \mu \\ \hline & \gamma & \eta & 1 & 0 \\ & \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$ $ \begin{array}{c cccc} E & A_1 & E \\ \hline & \eta & \mu \\ \hline & \eta & \alpha & 1 & 0 \\ \hline & \mu & \alpha & 0 & 1 \end{array} $
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array}$ $\begin{array}{c c} 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} 11.44 & \Gamma^{6} \times \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array}$ $\begin{array}{c c} 11.45 & \Gamma^{6} \times \Gamma^{5} \\ \hline \Gamma^{6} & \Gamma^{5} & \Gamma^{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha} $ 12.2 $A_1 \times A_2$ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ 12.3 $A_1 \times B_2$ $ \frac{A_1}{\alpha} \frac{B_2}{\zeta} \frac{\beta}{\zeta} $ 12.4 $A_1 \times B_1$ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma} $ 12.5 $A_1 \times E$	12.23 $E \times B_2$ $\frac{E B_2 \begin{vmatrix} E \\ \eta & \mu \end{vmatrix}}{\eta & \zeta \mid 0 & 1}$ $\frac{12.24 E \times B_1}{\mu \eta \mu}$ $\frac{E B_1 \begin{vmatrix} E \\ \eta & \mu \end{vmatrix}}{\eta \gamma \mid 1 0}$ $\frac{12.25 E \times E}{\mu \eta \eta $	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & \mu & \mu \\ \hline \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$ $ \begin{array}{c cccc} E & A_1 & \mu & \mu \\ \hline \eta & \alpha & 1 & 0 \\ \hline \mu & \alpha & 0 & 1 \end{array} $ 13.22 $E \times A_2$ $ \begin{array}{c cccc} E & A_2 & \mu & \mu \\ \hline \eta & \beta & 0 & -1 \\ \hline \mu & \beta & 1 & 0 \end{array} $ 13.23 $E \times B_2$
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array}$ $\begin{array}{c c} 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{2} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array}$ $\begin{array}{c c} 11.43 & \Gamma^{6} \times \Gamma^{3} \\ \hline \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} 11.44 & \Gamma^{6} \times \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{4} & \gamma_{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array}$ $\begin{array}{c c} 11.45 & \Gamma^{6} \times \Gamma^{5} \\ \hline \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} \times \Gamma^{6} \times \Gamma^{6} \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{5} & \Gamma^{6} \times \Gamma^{6} \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha} $ 12.2 $A_1 \times A_2$ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ 12.3 $A_1 \times B_2$ $ \frac{A_1}{\alpha} \frac{B_2}{\zeta} \frac{\beta}{\zeta} $ 12.4 $A_1 \times B_1$ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma} $ 12.5 $A_1 \times E$	12.23 $E \times B_2$ $ \frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}} $ 12.25 $E \times E$ $ \frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2}}{2}} $ $ \frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 \mid 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2}} $ $ \frac{\mu \eta \mid 0 \mid 0 0 \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2}}{\mu \mu \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0 \mid 0} $ 13 Group C_{4v}	13.20 $B_1 \times E$ $ \begin{array}{c cccc} B_1 & E & \mu & \mu \\ \hline \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{array} $ 13.21 $E \times A_1$ $ \begin{array}{c cccc} E & A_1 & \mu & \mu \\ \hline \eta & \alpha & 1 & 0 \\ \hline \mu & \alpha & 0 & 1 \end{array} $ 13.22 $E \times A_2$ $ \begin{array}{c cccc} E & A_2 & \mu & \mu \\ \hline \eta & \beta & 0 & -1 \\ \hline \mu & \beta & 1 & 0 \end{array} $ 13.23 $E \times B_2$ $ \begin{array}{c cccc} E & B_2 & \mu & \mu \\ \hline \eta & \zeta & 0 & 1 \\ \hline \mu & \zeta & 0 & 1 \\ \hline \mu & \zeta & 1 & 0 \end{array} $
$\begin{array}{c c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{1} & \gamma_{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{6} \\ \hline \Gamma^{6} & \Gamma^{6} & \gamma_{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \\ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \begin{array}{c c} A_1 & A_1 & A_1 \\ \hline A_1 & A_1 & \alpha \\ \hline \alpha & \alpha & 1 \end{array} $ 12.2 $A_1 \times A_2$ $ \begin{array}{c c} A_1 & A_2 & \beta \\ \hline \alpha & \beta & 1 \end{array} $ 12.3 $A_1 \times B_2$ $ \begin{array}{c c} A_1 & B_2 & \zeta \\ \hline \alpha & \zeta & 1 \end{array} $ 12.4 $A_1 \times B_1$ $ \begin{array}{c c} A_1 & B_1 & \beta \\ \hline \alpha & \gamma & 1 \end{array} $	12.23 $E \times B_2$ $ \frac{E B_2 \begin{vmatrix} E \\ \eta \mu \end{vmatrix}}{\frac{\eta \zeta \mid 0 \ 1}{\mu \zeta \mid 1 \ 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \begin{vmatrix} E \\ \eta \mu \end{vmatrix}}{\frac{\eta \gamma \mid 1 \ 0}{\mu \gamma \mid 0 \ -1}} $ 12.25 $E \times E$ $ \frac{E E \begin{vmatrix} A_1 \\ \alpha \end{vmatrix} \begin{vmatrix} B_1 \\ \gamma \end{vmatrix} \begin{vmatrix} B_2 \\ \beta \end{vmatrix}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\sqrt{2} \mid 0 \mid 0}} $ $ \frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\frac{\eta \mu \mid 0 \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\sqrt{2} \mid 0 \mid 0}} $ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $ \frac{A_1 A_1 \mid A_1 \mid \alpha}{\alpha \alpha \mid 1} $ $ \frac{A_1 A_1 \mid A_1 \mid \alpha}{\alpha \alpha \mid 1} $ 13.2 $A_1 \times A_2$	13.20 $B_1 \times E$ $ \frac{B_1}{\gamma} \frac{E}{\eta} \frac{\mu}{\mu} $ $ \frac{\gamma}{\gamma} \frac{\eta}{\eta} \begin{vmatrix} 1 & 0 \\ 0 & -1 \end{vmatrix} $ 13.21 $E \times A_1$ $ \frac{E}{\eta} \frac{A_1}{\eta} \frac{\mu}{\mu} $ $ \frac{\eta}{\eta} \frac{\alpha}{\alpha} \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} $ 13.22 $E \times A_2$ $ \frac{E}{\eta} \frac{A_2}{\eta} \frac{\mu}{\eta} $ $ \frac{\eta}{\eta} \frac{\beta}{\beta} \begin{vmatrix} 0 & -1 \\ \mu & \beta \end{vmatrix} \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} $ 13.23 $E \times B_2$ $ \frac{E}{\eta} \frac{B_2}{\eta} \frac{\mu}{\eta} $ $ \frac{\eta}{\eta} \frac{\zeta}{\zeta} \frac{0}{1} $ $ \frac{1}{\eta} \frac{\zeta}{\zeta} \frac{1}{1} \frac{0}{0} $ 13.24 $E \times B_1$
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array}$ $\begin{array}{c c} 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array}$ $\begin{array}{c c} 11.44 & \Gamma^{6} \times \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{5} & \Gamma^{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{6} \\ \hline \Gamma^{6} & \Gamma^{6} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{6} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{7} \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} \times \Gamma^{7} \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\alpha}$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{B_2}{\beta}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\beta}$ $\frac{A_1}{\alpha} \frac{B_1}{\beta} \frac{B_1}{\gamma}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E}{\eta} \frac{E}{\eta} \frac{\mu}{\eta}$ $\frac{A_1}{\alpha} \frac{B_1}{\eta} \frac{1}{0}$ 12.6 $A_2 \times A_1$	12.23 $E \times B_2$ $ \frac{E B_2 \begin{vmatrix} E \\ \eta \mu \end{vmatrix}}{\frac{\eta \zeta \mid 0 \ 1}{\mu \zeta \mid 1 \ 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \begin{vmatrix} E \\ \eta \mu \end{vmatrix}}{\frac{\eta \gamma \mid 1 \ 0}{\mu \gamma \mid 0 \ -1}} $ 12.25 $E \times E$ $ \frac{E E \begin{vmatrix} A_1 \\ \alpha \end{vmatrix} \begin{vmatrix} B_1 \\ \gamma \end{vmatrix} \begin{vmatrix} B_2 \\ \beta \end{vmatrix}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\sqrt{2} \mid 0 \mid 0}} $ $ \frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\frac{\eta \mu \mid 0 \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\sqrt{2} \mid 0 \mid 0}} $ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $ \frac{A_1 A_1 \mid A_1 \mid \alpha}{\alpha \alpha \mid 1} $ $ \frac{A_1 A_1 \mid A_1 \mid \alpha}{\alpha \alpha \mid 1} $ 13.2 $A_1 \times A_2$	13.20 $B_1 \times E$ $ \frac{B_1}{\gamma} \frac{E}{\eta} \frac{\mu}{\mu} $ $ \frac{\gamma}{\gamma} \frac{\eta}{\eta} \begin{vmatrix} 1 & 0 \\ 0 & -1 \end{vmatrix} $ 13.21 $E \times A_1$ $ \frac{E}{\eta} \frac{A_1}{\eta} \frac{\mu}{\mu} $ $ \frac{\eta}{\eta} \frac{\alpha}{\alpha} \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} $ 13.22 $E \times A_2$ $ \frac{E}{\eta} \frac{A_2}{\eta} \frac{\mu}{\eta} $ $ \frac{\eta}{\eta} \frac{\beta}{\beta} \begin{vmatrix} 0 & -1 \\ \mu & \beta \end{vmatrix} \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} $ 13.23 $E \times B_2$ $ \frac{E}{\eta} \frac{B_2}{\eta} \frac{\mu}{\eta} $ $ \frac{\eta}{\eta} \frac{\zeta}{\zeta} \frac{0}{1} $ $ \frac{1}{\eta} \frac{\zeta}{\zeta} \frac{1}{1} \frac{0}{0} $ 13.24 $E \times B_1$
$\begin{array}{c c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{1} & \gamma_{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \\ \hline \end{array}$ $\begin{array}{c c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{6} \\ \hline \Gamma^{6} & \Gamma^{6} & \gamma_{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \\ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta}$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{B_2}{\beta}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\beta}$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E}{\gamma} \frac{E}{\gamma} \frac{\mu}{\mu}$ $\frac{\alpha}{\alpha} \frac{\eta}{\mu} \frac{1}{0} \frac{1}{0}$ 12.6 $A_2 \times A_1$ $\frac{A_2}{\beta} \frac{A_1}{\beta} \frac{A_2}{\beta}$ $\frac{A_1}{\beta} \frac{A_2}{\beta}$	12.23 $E \times B_2$ $ \frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}} $ 12.25 $E \times E$ $ \frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\beta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\frac{\eta \mu \mid 0 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2}}{2}} $ $ \frac{\mu \eta \mid 0 0 \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2}}{\mu \mu \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0 \mid 0} $ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $ \frac{A_1 A_1 \mid A_1}{\alpha \alpha \alpha \mid 1} $	13.20 $B_1 \times E$ $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$ \begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{4} & \gamma_{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{6} \\ \hline \Gamma^{6} & \Gamma^{6} & \gamma_{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{7} & \Gamma^{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \end{array} $ $ \begin{array}{c c} \Gamma^{6} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \Gamma^{6} & \Gamma^{7} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{7} & \Gamma^{8} \\ \hline \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \Gamma^{6} & \Gamma^{8} \\ \hline$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha} $ 12.2 $A_1 \times A_2$ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{B_2}{\beta} $ 12.3 $A_1 \times B_2$ $ \frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\zeta} $ $ \frac{A_1}{\alpha} \frac{B_1}{\zeta} \frac{B_1}{\gamma} $ 12.4 $A_1 \times B_1$ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma} $ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma} $ 12.5 $A_1 \times E$ $ \frac{A_1}{\alpha} \frac{E}{\gamma} \frac{E}{\gamma} \frac{\mu}{\gamma} $ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{1}{\gamma} \frac{0}{0} $ 12.6 $A_2 \times A_1$ $ \frac{A_2}{\beta} \frac{A_1}{\alpha} \frac{A_2}{\beta} $	12.23 $E \times B_2$ $\frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}}$ 12.24 $E \times B_1$ $\frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}}$ 12.25 $E \times E$ $\frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 \mid 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}}$ $\frac{\mu \eta \mid 0 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 0}{\frac{\mu \eta \mid 0}{\mu \mu \mid 0 0 0 0}}$ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $\frac{A_1 A_1}{\alpha \alpha \mid 1} \mid \frac{A_1}{\alpha} \mid \frac{A_1}{\alpha \alpha \mid 1}$ 13.2 $A_1 \times A_2$ $\frac{A_1 A_2}{\alpha \beta \mid 1} \mid 1$ 13.3 $A_1 \times B_2$	13.20 $B_1 \times E$ $ \frac{B_1}{\gamma} \frac{E}{\eta} \frac{\mu}{\mu} $ $ \frac{\gamma}{\gamma} \frac{\eta}{\eta} \begin{vmatrix} 1 & 0 \\ 0 & -1 \end{vmatrix} $ 13.21 $E \times A_1$ $ \frac{E}{\eta} \frac{A_1}{\eta} \frac{\mu}{\mu} $ $ \frac{\eta}{\eta} \frac{\alpha}{\alpha} \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} $ 13.22 $E \times A_2$ $ \frac{E}{\eta} \frac{A_2}{\eta} \frac{\mu}{\eta} $ $ \frac{\eta}{\eta} \frac{\beta}{\beta} \begin{vmatrix} 0 & -1 \\ \mu & \beta \end{vmatrix} \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} $ 13.23 $E \times B_2$ $ \frac{E}{\eta} \frac{B_2}{\eta} \frac{\mu}{\eta} $ $ \frac{\eta}{\eta} \frac{\zeta}{\zeta} \frac{0}{1} $ $ \frac{1}{\eta} \frac{\zeta}{\zeta} \frac{1}{1} \frac{0}{0} $ 13.24 $E \times B_1$
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \gamma_{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c} 11.42 & \Gamma^{6} \times \Gamma^{2} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \gamma_{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c} 11.44 & \Gamma^{6} \times \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{4} & \gamma_{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c} 11.45 & \Gamma^{6} \times \Gamma^{5} \\ \hline \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{5} & \gamma_{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} \times \Gamma^{6} \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} & \gamma_{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{7} & \gamma_{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \\ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1}{\alpha} \frac{A_1}{\alpha} \begin{vmatrix} A_1 \\ \alpha \\ \alpha \end{vmatrix} = 1 $ 12.2 $A_1 \times A_2$ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \begin{vmatrix} A_2 \\ \beta \\ \alpha \\ \beta \end{vmatrix} = 1 $ 12.3 $A_1 \times B_2$ $ \frac{A_1}{\alpha} \frac{B_2}{\beta} \begin{vmatrix} \beta_2 \\ \beta \\ \alpha \\ \zeta \end{vmatrix} = 1 $ 12.4 $A_1 \times B_1$ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \begin{vmatrix} B_1 \\ \gamma \\ \alpha \\ \gamma \end{vmatrix} = 1 $ 12.5 $A_1 \times E$ $ \frac{A_1}{\alpha} \frac{E \begin{vmatrix} F \\ \eta \\ \mu \\ \alpha \\ \mu \end{vmatrix} = 1 $ 12.6 $A_2 \times A_1$ $ \frac{A_2}{\beta} \frac{A_1}{\alpha} \begin{vmatrix} A_2 \\ \beta \\ \alpha \end{vmatrix} = 1 $ 12.7 $A_2 \times A_2$ $ \frac{A_2}{\beta} \frac{A_2}{\beta} \begin{vmatrix} A_1 \\ \beta \\ \beta \end{vmatrix} = 1 $ 12.7 $A_2 \times A_2$	12.23 $E \times B_2$ $\frac{E B_2 \mid \frac{E}{\eta \mu}}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}}$ 12.24 $E \times B_1$ $\frac{E B_1 \mid \frac{E}{\eta \mu}}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}}$ 12.25 $E \times E$ $\frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\eta \mu \mid 0 \mid 0 0 \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0}}$ $\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\frac{\eta \mu \mid 0 \mid 0 0 \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0}{\eta \mu \mid 0 \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0 \mid 0}}$ 13.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} A_1 \mid \frac{A_1}{\alpha}$ $\frac{A_1}{\alpha} A_1 \mid \frac{A_1}{\alpha}$ $\frac{A_1}{\alpha} A_1 \mid \frac{A_1}{\alpha}$ $\frac{A_1}{\alpha} A_1 \mid \frac{A_1}{\alpha}$ $\frac{A_1}{\alpha} A_1 \mid \frac{A_2}{\beta}$ $\frac{A_1}{\alpha} \beta \mid 1$ 13.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} B_2 \mid \frac{B_2}{\zeta}$ $\frac{A_1}{\alpha} B_2 \mid \frac{B_2}{\zeta}$	13.20 $B_1 \times E$ $ \frac{B_1}{\gamma} = \begin{bmatrix} E \\ \eta & \mu \\ \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{bmatrix} $ 13.21 $E \times A_1$ $ \frac{E A_1}{\eta} = \begin{bmatrix} A_1 & E \\ \eta & \mu \\ \eta & \alpha & 1 & 0 \\ \mu & \alpha & 0 & 1 \end{bmatrix} $ 13.22 $E \times A_2$ $ \frac{E A_2}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \beta & 0 & -1 \\ \mu & \beta & 1 & 0 \end{bmatrix} $ 13.23 $E \times B_2$ $ \frac{E B_2}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \zeta & 0 & 1 \\ \mu & \zeta & 1 & 0 \end{bmatrix} $ 13.24 $E \times B_1$ $ \frac{E B_1}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \zeta & 0 & 1 \\ \mu & \zeta & 1 & 0 \end{bmatrix} $ 13.25 $E \times E$ $ \frac{E B_1}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \gamma & 0 & -1 \\ \eta & \gamma & 0 & -1 \end{bmatrix} $ 13.25 $E \times E$
$\begin{array}{c c} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{2} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{2} & \Gamma^{4} \\ \hline \Gamma^{6} & \Gamma^{2} & \gamma_{4} \\ \hline \gamma_{6} & \gamma_{2} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{3} & \Gamma^{5} \\ \hline \gamma_{6} & \gamma_{3} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{4} & \Gamma^{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{4} & \gamma_{3} \\ \hline \gamma_{6} & \gamma_{4} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{5} & \gamma_{2} \\ \hline \gamma_{6} & \gamma_{5} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{6} & \Gamma^{6} \\ \hline \Gamma^{6} & \Gamma^{6} & \gamma_{8} \\ \hline \gamma_{6} & \gamma_{6} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{7} & \Gamma^{1} \\ \hline \gamma_{6} & \gamma_{7} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{8} & \gamma_{7} \\ \hline \gamma_{6} & \gamma_{8} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{6} & \Gamma^{8} & \gamma_{7} \\ \hline \gamma_{6} & \gamma_{8} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{7} & \gamma_{7} \\ \hline \gamma_{6} & \gamma_{8} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{7} & \gamma_{7} \\ \hline \gamma_{6} & \gamma_{8} & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^{7} & \gamma_{7} \\ \hline \gamma_{6} & \gamma_{8} & 1 \\ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha}$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_2}{\alpha}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta}$ $\frac{A_1}{\alpha} \frac{B_1}{\beta} \frac{B_2}{\zeta}$ $\frac{A_1}{\alpha} \frac{B_2}{\zeta} \frac{\zeta}{\zeta}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E}{\gamma} \frac{E}{\gamma} \frac{\mu}{\alpha}$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{A_2}{\alpha}$ $\frac{A_2}{\alpha} \frac{A_1}{\alpha} \frac{A_2}{\beta}$ $\frac{A_2}{\beta} \frac{A_1}{\alpha} \frac{A_2}{\beta}$ 12.7 $A_2 \times A_2$ $\frac{A_2}{\beta} \frac{A_2}{\beta} \frac{A_1}{\alpha}$ $\frac{A_2}{\beta} \frac{A_1}{\beta} \frac{A_2}{\beta}$ 12.8 $A_2 \times B_2$	12.23 $E \times B_2$ $\frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}}$ 12.24 $E \times B_1$ $\frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}}$ 12.25 $E \times E$ $\frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta} \mid \frac{A_2}{\beta}}{\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}}$ $\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\mu \mu \mid 0 0 \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0}$ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $\frac{A_1}{\mu \mu} \mid \frac{A_1}{\mu \alpha} \mid \frac{A_1}{\mu \alpha} \mid 1$ 13.2 $A_1 \times A_2$ $\frac{A_1}{\mu A_2} \mid \frac{A_2}{\mu \alpha} \mid 1$ 13.3 $A_1 \times B_2$ $\frac{A_1}{\mu B_2} \mid \frac{B_2}{\mu \alpha} \mid 1$ 13.4 $A_1 \times B_1$	13.20 $B_1 \times E$ $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccc} \Gamma^{6} & \Gamma^{1} & \Gamma^{6} \\ \hline \gamma_{6} & \gamma_{1} & 1 \\ \hline \end{array}$ $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_2}{\alpha \alpha 1}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta 1}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\zeta 1}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma 1}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E \frac{E}{\eta} \mu}{\alpha \eta 1}$ $\frac{A_1}{\alpha} \frac{E \frac{E}{\eta} \mu}{\alpha 0 1}$ 12.6 $A_2 \times A_1$ $\frac{A_2}{\beta} \frac{A_1}{\alpha 1}$ 12.7 $A_2 \times A_2$ $\frac{A_2}{\beta} \frac{A_2}{\beta 1}$ 12.8 $A_2 \times B_2$ $\frac{A_2}{\beta} \frac{B_2}{\zeta 1}$	12.23 $E \times B_2$ $ \frac{E B_2 \mid \frac{F}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \mid \frac{F}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}} $ 12.25 $E \times E$ $ \frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta \mid \beta} \mid \frac{A_2}{\beta} \mid \frac{A_2}{\beta} \mid \frac{A_2}{\gamma \mid 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\frac{\eta \mu \mid 0 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\frac{\sqrt{2}}{2} \mid 0 0 0} $ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $ \frac{A_1 A_1 \mid \frac{A_1}{\alpha} \mid \frac{A_1}{\alpha \alpha \mid 1}}{\frac{A_1 A_1 \mid \frac{A_2}{\beta} \mid \beta}{\alpha \beta \mid 1}} $ 13.2 $A_1 \times A_2$ $ \frac{A_1 A_2 \mid \frac{A_2}{\beta} \mid \beta}{\alpha \beta \mid 1} $ 13.3 $A_1 \times B_2$ $ \frac{A_1 B_2 \mid \frac{B_2}{\zeta} \mid \frac{C}{\zeta} \mid 1}{\alpha \zeta \mid 1} $ 13.4 $A_1 \times B_1$ $ \frac{A_1 B_1 \mid \frac{B_1}{\gamma} \mid \frac{A_1}{\gamma} \mid 1}{\alpha \gamma \mid 1} $	13.20 $B_1 \times E$ $ \frac{B_1}{\gamma} = \begin{bmatrix} E \\ \eta & \mu \\ \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{bmatrix} $ 13.21 $E \times A_1$ $ \frac{E A_1}{\eta} = \begin{bmatrix} A_1 & E \\ \eta & \mu \\ \eta & \alpha & 1 & 0 \\ \mu & \alpha & 0 & 1 \end{bmatrix} $ 13.22 $E \times A_2$ $ \frac{E A_2}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \beta & 0 & -1 \\ \mu & \beta & 1 & 0 \end{bmatrix} $ 13.23 $E \times B_2$ $ \frac{E B_2}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \zeta & 0 & 1 \\ \mu & \zeta & 1 & 0 \end{bmatrix} $ 13.24 $E \times B_1$ $ \frac{E B_1}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \zeta & 0 & 1 \\ \mu & \zeta & 1 & 0 \end{bmatrix} $ 13.25 $E \times E$ $ \frac{E B_1}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \eta & \gamma & 0 & -1 \\ \eta & \gamma & 0 & -1 \end{bmatrix} $ 13.25 $E \times E$
$\begin{array}{c cccc} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c cccccc} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c ccccc} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c cccccc} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\zeta}$ $\frac{A_1}{\alpha} \frac{B_2}{\zeta} \frac{S}{\zeta}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E}{\gamma} \frac{B}{\gamma} \frac{\mu}{\alpha}$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{A_2}{\gamma}$ 12.6 $A_2 \times A_1$ $\frac{A_2}{\alpha} \frac{A_1}{\beta} \frac{A_2}{\beta}$ $\frac{A_2}{\alpha} \frac{A_2}{\alpha} \frac{A_2}{\alpha}$ 12.7 $A_2 \times A_2$ $\frac{A_2}{\alpha} \frac{A_2}{\beta} \frac{A_1}{\beta}$ 12.8 $A_2 \times B_2$ $\frac{A_2}{\beta} \frac{B_2}{\gamma} \frac{B_1}{\gamma}$ 12.9 $A_2 \times B_1$	12.23 $E \times B_2$ $\frac{E B_2}{\eta \zeta \mid 0 1} \frac{\mu}{\eta \zeta \mid 0 1}$ 12.24 $E \times B_1$ $\frac{E B_1}{\eta \eta \mu} \frac{\mu}{\eta \gamma \mid 1 0}$ 12.25 $E \times E$ $\frac{E E A_1}{\eta \eta \mid 0 0 1} \frac{B_2}{\eta \gamma \mid 0 -1}$ 12.26 $E \times E$ $\frac{E E A_1}{\eta \eta \mid 0 0 0} \frac{B_2}{\eta \gamma \mid 0 0} \frac{A_2}{\eta 2}$ $\frac{\eta \eta \mid 0 0 \sqrt{2} \sqrt{2} \sqrt{2}}{\eta \mu \mid 0 0 \sqrt{2} \sqrt{2} \sqrt{2}}$ $\frac{\mu}{\eta \eta \mid 0 \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2}}{\eta \mu \mid 0 0 \sqrt{2} \sqrt{2} \sqrt{2}}$ $\frac{\mu}{\eta \eta \mid 0 0 \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2}}{\eta \mu \mid 0 0 0}$ 13. Group C_{4v} 13.1 $A_1 \times A_1$ $\frac{A_1 A_1 \mid A_1 \mid \alpha \mid \alpha \mid \alpha \mid \alpha \mid 1}{\alpha \alpha \alpha \mid 1}$ 13.2 $A_1 \times A_2$ $\frac{A_1 A_2 \mid A_2 \mid \beta \mid \alpha \mid \alpha \mid \alpha \mid 1}{\alpha \beta \mid 1}$ 13.3 $A_1 \times B_2$ $A_1 A_2 \mid A_2 \mid \beta \mid \alpha \mid \alpha$	13.20 $B_1 \times E$ $\frac{B_1 E \mid \frac{E}{\eta} \mu}{\gamma \eta \mid 1 0}$ $\gamma \mu \mid 0 -1$ 13.21 $E \times A_1$ $\frac{E A_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \alpha \mid 1 0}{\mu \alpha \mid 0 1}}$ 13.22 $E \times A_2$ $\frac{E A_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \beta \mid 0 -1}{\mu \beta \mid 1 0}}$ 13.23 $E \times B_2$ $\frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}}$ 13.24 $E \times B_1$ $\frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}}$ 13.25 $E \times E$ $\frac{E E \mid A_1 \mid B_1 \mid B_2 \mid A_2}{\eta \mu \mid \frac{Q}{\eta} \gamma \mid \frac{Q}{\eta} \mid \frac{Q}$
$\begin{array}{c cccc} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c cccccc} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c ccccc} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c cccccc} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_2}{\alpha \alpha 1}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta 1}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\zeta 1}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma 1}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E \frac{E}{\eta} \mu}{\alpha \eta 1}$ $\frac{A_1}{\alpha} \frac{E \frac{E}{\eta} \mu}{\alpha 0 1}$ 12.6 $A_2 \times A_1$ $\frac{A_2}{\beta} \frac{A_1}{\alpha 1}$ 12.7 $A_2 \times A_2$ $\frac{A_2}{\beta} \frac{A_2}{\beta 1}$ 12.8 $A_2 \times B_2$ $\frac{A_2}{\beta} \frac{B_2}{\zeta 1}$	12.23 $E \times B_2$ $ \frac{E B_2 \mid \frac{F}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}} $ 12.24 $E \times B_1$ $ \frac{E B_1 \mid \frac{F}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}} $ 12.25 $E \times E$ $ \frac{E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\gamma} \mid \frac{B_2}{\zeta \mid \beta} \mid \frac{A_2}{\beta} \mid \frac{A_2}{\beta} \mid \frac{A_2}{\gamma \mid 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\frac{\eta \mu \mid 0 0 0 \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}{\frac{\sqrt{2}}{2} \mid 0 0 0} $ 13 Group C_{4v} 13.1 $A_1 \times A_1$ $ \frac{A_1 A_1 \mid \frac{A_1}{\alpha} \mid \frac{A_1}{\alpha \alpha \mid 1}}{\frac{A_1 A_1 \mid \frac{A_2}{\beta} \mid \beta}{\alpha \beta \mid 1}} $ 13.2 $A_1 \times A_2$ $ \frac{A_1 A_2 \mid \frac{A_2}{\beta} \mid \beta}{\alpha \beta \mid 1} $ 13.3 $A_1 \times B_2$ $ \frac{A_1 B_2 \mid \frac{B_2}{\zeta} \mid \frac{C}{\zeta} \mid 1}{\alpha \zeta \mid 1} $ 13.4 $A_1 \times B_1$ $ \frac{A_1 B_1 \mid \frac{B_1}{\gamma} \mid \frac{A_1}{\gamma} \mid 1}{\alpha \gamma \mid 1} $	13.20 $B_1 \times E$ $ \frac{B_1}{\gamma} = \begin{bmatrix} E \\ \eta & \mu \\ \hline \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{bmatrix} $ 13.21 $E \times A_1$ $ \frac{E A_1}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \hline \eta & \alpha & 1 & 0 \\ \hline \mu & \alpha & 0 & 1 \end{bmatrix} $ 13.22 $E \times A_2$ $ \frac{E A_2}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \hline \eta & \beta & 0 & -1 \\ \hline \mu & \beta & 1 & 0 \end{bmatrix} $ 13.23 $E \times B_2$ $ \frac{E B_2}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \hline \eta & \zeta & 0 & 1 \\ \hline \mu & \zeta & 1 & 0 \end{bmatrix} $ 13.24 $E \times B_1$ $ \frac{E B_1}{\eta} = \begin{bmatrix} E \\ \eta & \mu \\ \hline \eta & \gamma & 1 & 0 \\ \hline \mu & \gamma & 0 & -1 \end{bmatrix} $ 13.25 $E \times E$ $ \frac{E E A_1}{\eta} = \begin{bmatrix} A_1 & B_1 & B_2 & A_2 \\ \eta & \eta & 0 & 0 & \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \\ \eta & \mu & 0 & 0 & 0 & \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \\ \hline \mu & \eta & 0 & 0 & \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \\ \mu & \mu & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 0 & 0 \\ \mu & \mu & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \hline \mu & \eta & 0 & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \mu & \mu & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \mu & \mu & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \hline 10 & 0 & 0 & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \hline 10 & 0 & 0 & 0 & 0 & 0 \\ \hline 14 & Group D_{2d}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\alpha}$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{B_2}{\beta}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\beta}$ $\frac{A_1}{\alpha} \frac{B_1}{\beta} \frac{B_1}{\gamma}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E}{\eta} \frac{B_1}{\eta} \mu$ $\frac{A_1}{\alpha} \frac{A_1}{\eta} \frac{1}{1} \frac{0}{0}$ 12.6 $A_2 \times A_1$ $\frac{A_2}{\beta} \frac{A_1}{\alpha} \frac{A_2}{\beta}$ 12.7 $A_2 \times A_2$ $\frac{A_2}{\beta} \frac{A_2}{\beta} \frac{A_2}{\beta}$ $\frac{A_2}{\beta} \frac{B_1}{\beta} \frac{1}{1}$ 12.8 $A_2 \times B_2$ $\frac{A_2}{\beta} \frac{B_2}{\gamma} \frac{A_2}{\gamma}$ $\frac{B_1}{\beta} \frac{B_1}{\zeta}$ $\frac{A_2}{\beta} \frac{B_1}{\zeta} \frac{B_1}{\zeta}$ 12.9 $A_2 \times B_1$ $\frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta}$ $\frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta}$ $\frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta}$	12.23 $E \times B_2$ $\frac{E B_2}{\eta \zeta \mid 0 1} \frac{\mu}{\eta \zeta \mid 1 0}$ 12.24 $E \times B_1$ $\frac{E B_1}{\eta \gamma \mid 1 0} \frac{\mu}{\eta \gamma \mid 1 0}$ 12.25 $E \times E$ $\frac{E E \mid A_1 \mid B_1 \mid B_2 \mid A_2}{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}$ $\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}$ $\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}$ 13.1 $A_1 \times A_1$ $\frac{A_1 A_1 \mid A_1}{\alpha \alpha \alpha \mid 1}$ 13.2 $A_1 \times A_2$ $\frac{A_1 A_2 \mid A_2}{\alpha \beta \mid 1}$ 13.3 $A_1 \times B_2$ $\frac{A_1 A_2 \mid A_2}{\alpha \beta \mid 1}$ 13.4 $A_1 \times B_1$ $\frac{A_1 B_1 \mid B_1}{\alpha \gamma \mid 1}$ 13.5 $A_1 \times E$ $\frac{A_1 E \mid \frac{E}{\eta} \mu}{\alpha \eta \mid 1 0}$ $\frac{\alpha \eta \mid 1 0}{\alpha \mu \mid 0 1}$ 13.6 $A_2 \times A_1$	13.20 $B_1 \times E$ $\frac{B_1}{\gamma} = \frac{E}{\eta} \frac{\mu}{\mu}$ $\frac{\gamma}{\gamma} = \frac{\eta}{\eta} \frac{1}{0} = 0$ 13.21 $E \times A_1$ $\frac{E}{\eta} = \frac{A_1}{\eta} \frac{E}{\eta} \frac{\mu}{\mu}$ $\frac{\eta}{\eta} = \frac{\alpha}{\eta} = 0 = 1$ 13.22 $E \times A_2$ $\frac{E}{\eta} = \frac{A_2}{\eta} \frac{E}{\eta} \frac{\mu}{\mu}$ $\frac{\eta}{\eta} = \frac{\beta}{\eta} = 0 = 1$ $\frac{B}{\eta} = \frac{B}{\eta} = \frac{B}{\eta} = 0$ 13.23 $E \times B_2$ $\frac{E}{\eta} = \frac{B_2}{\eta} = \frac{E}{\eta} = \frac{B_2}{\eta} = \frac{A_2}{\eta} = \frac{B_2}{\eta} = \frac{A_2}{\eta} = A_$
$\begin{array}{c c} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^2 & \gamma_6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^3 & \Gamma^5 \\ \hline \gamma_6 & \gamma_3 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^3 & \gamma_5 \\ \hline \gamma_6 & \gamma_3 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^3 & \gamma_5 \\ \hline \gamma_6 & \gamma_3 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^4 & \gamma_3 \\ \hline \gamma_6 & \gamma_4 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^6 & \Gamma^5 \\ \hline \gamma_6 & \gamma_5 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^6 & \gamma^5 \\ \hline \gamma_6 & \gamma_5 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^6 & \gamma^6 \\ \hline \gamma_6 & \gamma_6 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^6 & \gamma^6 \\ \hline \gamma_6 & \gamma_7 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^7 & \gamma_1 \\ \hline \gamma_6 & \gamma_7 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^8 & \gamma_7 \\ \hline \gamma_6 & \gamma_8 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^8 & \gamma_7 \\ \hline \gamma_6 & \gamma_8 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^1 & \gamma_7 \\ \hline \gamma_7 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^1 & \gamma_7 \\ \hline \gamma_7 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \gamma_5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \gamma_5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \gamma_5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \Gamma^5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \Gamma^5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha}$ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\alpha}$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{B_2}{\beta}$ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\beta}$ $\frac{A_1}{\alpha} \frac{B_1}{\beta} \frac{B_1}{\gamma}$ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma}$ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{E}{\eta} \frac{B_1}{\eta} \mu$ $\frac{A_1}{\alpha} \frac{A_1}{\eta} \frac{1}{1} \frac{0}{0}$ 12.6 $A_2 \times A_1$ $\frac{A_2}{\beta} \frac{A_1}{\alpha} \frac{A_2}{\beta}$ 12.7 $A_2 \times A_2$ $\frac{A_2}{\beta} \frac{A_2}{\beta} \frac{A_2}{\beta}$ $\frac{A_2}{\beta} \frac{B_1}{\beta} \frac{1}{1}$ 12.8 $A_2 \times B_2$ $\frac{A_2}{\beta} \frac{B_2}{\gamma} \frac{A_2}{\gamma}$ $\frac{B_1}{\beta} \frac{B_1}{\zeta}$ $\frac{A_2}{\beta} \frac{B_1}{\zeta} \frac{B_1}{\zeta}$ 12.9 $A_2 \times B_1$ $\frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta}$ $\frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta}$ $\frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta}$	12.23 $E \times B_2$ $\frac{E B_2}{\eta \zeta \mid 0 1} \frac{\mu}{\eta \zeta \mid 1 0}$ 12.24 $E \times B_1$ $\frac{E B_1}{\eta \gamma \mid 1 0} \frac{\mu}{\eta \gamma \mid 1 0}$ 12.25 $E \times E$ $\frac{E E \mid A_1 \mid B_1 \mid B_2 \mid A_2}{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}$ $\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}$ $\frac{\eta \eta \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0}{\eta \mu \mid 0 \mid 0 \mid \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0}$ 13.1 $A_1 \times A_1$ $\frac{A_1 A_1 \mid A_1}{\alpha \alpha \alpha \mid 1}$ 13.2 $A_1 \times A_2$ $\frac{A_1 A_2 \mid A_2}{\alpha \beta \mid 1}$ 13.3 $A_1 \times B_2$ $\frac{A_1 A_2 \mid A_2}{\alpha \beta \mid 1}$ 13.4 $A_1 \times B_1$ $\frac{A_1 B_1 \mid B_1}{\alpha \gamma \mid 1}$ 13.5 $A_1 \times E$ $\frac{A_1 E \mid \frac{E}{\eta} \mu}{\alpha \eta \mid 1 0}$ $\frac{\alpha \eta \mid 1 0}{\alpha \mu \mid 0 1}$ 13.6 $A_2 \times A_1$	13.20 $B_1 \times E$ $\frac{B_1}{\gamma} = \frac{E}{\eta} \frac{\mu}{\mu}$ $\frac{\gamma}{\gamma} = \frac{\eta}{\eta} \frac{1}{0} = 0$ 13.21 $E \times A_1$ $\frac{E}{\eta} = \frac{A_1}{\eta} \frac{E}{\eta} \frac{\mu}{\mu}$ $\frac{\eta}{\eta} = \frac{\alpha}{\eta} = 0 = 1$ 13.22 $E \times A_2$ $\frac{E}{\eta} = \frac{A_2}{\eta} \frac{E}{\eta} \frac{\mu}{\mu}$ $\frac{\eta}{\eta} = \frac{\beta}{\eta} = 0 = 1$ $\frac{B}{\eta} = \frac{B}{\eta} = \frac{B}{\eta} = 0$ 13.23 $E \times B_2$ $\frac{E}{\eta} = \frac{B_2}{\eta} = \frac{E}{\eta} = \frac{B_2}{\eta} = \frac{A_2}{\eta} = \frac{B_2}{\eta} = \frac{A_2}{\eta} = A_$
$\begin{array}{c c} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^2 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^2 & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^3 & \Gamma^5 \\ \hline \gamma_6 & \gamma_3 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^3 & \Gamma^5 \\ \hline \gamma_6 & \gamma_3 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^3 & \Gamma^5 \\ \hline \gamma_6 & \gamma_3 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^4 & \Gamma^3 \\ \hline \gamma_6 & \gamma_4 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^6 \times \Gamma^5 \\ \hline \Gamma^6 & \Gamma^5 & \Gamma^2 \\ \hline \gamma_6 & \gamma_5 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^6 \times \Gamma^5 \\ \hline \Gamma^6 & \Gamma^6 & \Gamma^6 \\ \hline \Gamma^6 & \Gamma^6 & \Gamma^8 \\ \hline \gamma_6 & \gamma_6 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^7 & \Gamma^1 \\ \hline \gamma_6 & \gamma_7 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^8 & \Gamma^7 \\ \hline \gamma_6 & \gamma_8 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^6 & \Gamma^8 & \Gamma^7 \\ \hline \gamma_6 & \gamma_8 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^1 & \Gamma^7 \\ \hline \gamma_7 & \gamma_7 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^1 & \Gamma^7 \\ \hline \gamma_7 & \gamma_7 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \Gamma^5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$ $\begin{array}{c c} \Gamma^7 & \Gamma^2 & \Gamma^5 \\ \hline \gamma_7 & \gamma_2 & 1 \\ \hline \end{array}$	12 Group D_4 12.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha} $ 12.2 $A_1 \times A_2$ $\frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{B_2}{\beta} $ 12.3 $A_1 \times B_2$ $\frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\zeta} $ $\frac{A_1}{\alpha} \frac{B_2}{\zeta} \frac{\beta}{\zeta} $ 12.4 $A_1 \times B_1$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{\beta}{\gamma} $ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{\beta}{\gamma} $ 12.5 $A_1 \times E$ $\frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma} $ $\frac{A_1}{\alpha} \frac{A_1}{\gamma} \frac{1}{10} $ $\frac{A_2}{\alpha} \frac{A_1}{\gamma} \frac{1}{10} $ $\frac{A_2}{\alpha} \frac{A_1}{\gamma} \frac{\beta}{\beta} $ $\frac{A_2}{\beta} \frac{A_1}{\alpha} $ 12.7 $A_2 \times A_2$ $\frac{A_2}{\beta} \frac{A_1}{\beta} $ $\frac{A_2}{\beta} \frac{A_1}{\beta} $ $\frac{A_2}{\beta} \frac{A_1}{\beta} $ $\frac{A_2}{\beta} \frac{B_1}{\gamma} $ $\frac{A_2}{\beta} \frac{B_1}{\zeta} $	12.23 $E \times B_2$ $\frac{E B_2}{\eta \mu} \frac{E}{\eta \zeta \mid 0 1}$ $\frac{P P_2}{\eta \zeta \mid 1 0}$ 12.24 $E \times B_1$ $\frac{E B_1}{\eta \gamma \mid 1 0} \frac{E B_1}{\eta \gamma \mid 1 0}$ 12.25 $E \times E$ $\frac{E E A_1}{\alpha \gamma \gamma \mid 1 0} \frac{P P_2}{\eta \gamma \mid 0 -1}$ 12.26 $\frac{E E A_2}{\alpha \gamma \gamma \mid 0 -1}$ $\frac{P P_2}{\eta \gamma \mid 0 -1} \frac{P P_2}{\eta \gamma \mid 0 0} \frac{P P_2}{\eta \gamma \mid 0 0}$ 13.1 $P P P P P P P P P P $	13.20 $B_1 \times E$ $\frac{B_1 E \mid \frac{E}{\eta} \mu}{\gamma \eta \mid 1 0} \frac{1}{\eta}$ 13.21 $E \times A_1$ $\frac{E A_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \alpha \mid 1 0}{\mu \alpha \mid 0 1}}$ 13.22 $E \times A_2$ $\frac{E A_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \beta \mid 0 -1}{\mu \beta \mid 1 0}}$ 13.23 $E \times B_2$ $\frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}}$ 13.24 $E \times B_1$ $\frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}}$ 13.25 $E \times E$ $E E \mid \frac{A_1}{\alpha} \mid \frac{B_1}{\eta} \mid \frac{B_2}{\zeta} \mid \frac{A_2}{\beta} \mid \frac{B_2}{\eta} \mid \frac{A_2}{\zeta} \mid \frac{A_2}{\eta} \mid \frac{A_1}{\eta} \mid A_$
$\begin{array}{c ccccc} \Gamma^6 & \Gamma^1 & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$ $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12 Group D_4 12.1 $A_1 \times A_1$ $ \frac{A_1}{\alpha} \frac{A_1}{\alpha} \frac{A_1}{\alpha} $ 12.2 $A_1 \times A_2$ $ \frac{A_1}{\alpha} \frac{A_2}{\beta} \frac{A_2}{\beta} $ 12.3 $A_1 \times B_2$ $ \frac{A_1}{\alpha} \frac{B_2}{\beta} \frac{B_2}{\zeta} $ $ \frac{A_1}{\alpha} \frac{B_1}{\zeta} \frac{B_1}{\zeta} $ 12.4 $A_1 \times B_1$ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{B_1}{\gamma} $ 12.5 $A_1 \times E$ $ \frac{A_1}{\alpha} \frac{E}{\gamma} \frac{B}{\gamma} \frac{\mu}{\alpha} $ $ \frac{A_1}{\alpha} \frac{B_1}{\gamma} \frac{A_2}{\gamma} $ 12.6 $A_2 \times A_1$ $ \frac{A_2}{\beta} \frac{A_1}{\beta} \frac{A_1}{\beta} $ $ \frac{A_2}{\beta} \frac{A_1}{\alpha} \frac{A_2}{\beta} $ $ \frac{A_2}{\beta} \frac{A_1}{\beta} \frac{A_1}{\beta} $ 12.7 $A_2 \times A_2$ $ \frac{A_2}{\beta} \frac{A_1}{\beta} \frac{A_1}{\beta} $ $ \frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{A_2}{\beta} $ 12.8 $A_2 \times B_2$ $ \frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta} $ $ \frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta} $ 12.9 $A_2 \times B_1$ $ \frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta} $ $ \frac{A_2}{\beta} \frac{B_1}{\gamma} \frac{B_2}{\zeta} $ 12.10 $A_2 \times E$ $ \frac{A_2}{\beta} \frac{E}{\gamma} \frac{E}{\gamma} \frac{\mu}{\gamma} $ 12.10 $A_2 \times E$	12.23 $E \times B_2$ $\frac{E B_2 \mid \frac{E}{\eta} \mu}{\frac{\eta \zeta \mid 0 1}{\mu \zeta \mid 1 0}}$ 12.24 $E \times B_1$ $\frac{E B_1 \mid \frac{E}{\eta} \mu}{\frac{\eta \gamma \mid 1 0}{\mu \gamma \mid 0 -1}}$ 12.25 $E \times E$ $\frac{E E \mid A_1 \mid B_1 \mid B_2 \mid A_2}{\frac{\eta \eta}{\eta \gamma \mid 0 0} \frac{\eta}{\gamma \beta} \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2}}{\sqrt{2}}}$ $\frac{\eta \eta \frac{\sqrt{2}}{2} \mid -\frac{\sqrt{2}}{2} \mid 0 0}{\eta \mu 0 0 0} \frac{\sqrt{2}}{\sqrt{2}} \mid -\frac{\sqrt{2}}{2}}{\sqrt{2}}$ $\frac{\mu \eta 0}{\mu \mu \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid \frac{\sqrt{2}}{2} \mid 0 \mid 0}$ 13.1 $A_1 \times A_1$ $\frac{A_1 A_1 \mid A_1}{\alpha \alpha \alpha \mid 1}$ 13.2 $A_1 \times A_2$ $\frac{A_1 A_1 \mid A_1}{\alpha \alpha \alpha \mid 1}$ 13.3 $A_1 \times B_2$ $\frac{A_1 A_2 \mid A_2}{\alpha \beta \mid 1}$ 13.4 $A_1 \times B_1$ $\frac{A_1 B_1 \mid \frac{B_1}{\gamma}}{\alpha \zeta \mid 1}$ 13.5 $A_1 \times E$ $\frac{A_1 B_1 \mid \frac{B_1}{\gamma}}{\alpha \gamma \mid 1}$ 13.6 $A_2 \times A_1$ $\frac{A_2 A_1 \mid A_2}{\beta \alpha \mid 1}$ 13.6 $A_2 \times A_1$	13.20 $B_1 \times E$ $\frac{B_1}{\gamma} = \begin{bmatrix} E & \mu & \mu \\ \eta & \mu & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{bmatrix}$ 13.21 $E \times A_1$ $\frac{E A_1}{\eta} = \begin{bmatrix} A_1 & \mu & \mu \\ \frac{\eta & \alpha & 1 & 0}{\mu & \alpha & 0 & 1} \end{bmatrix}$ 13.22 $E \times A_2$ $\frac{E A_2}{\eta} = \begin{bmatrix} A_1 & \mu & \mu \\ \frac{\eta & \beta & 0 & -1}{\mu & \beta & 1 & 0} \end{bmatrix}$ 13.23 $E \times B_2$ $\frac{E B_2}{\eta} = \begin{bmatrix} E & \mu & \mu \\ \frac{\eta & \zeta & 0 & 1}{\mu & \zeta & 1 & 0} \end{bmatrix}$ 13.24 $E \times B_1$ $\frac{E B_1}{\eta} = \begin{bmatrix} E & \mu & \mu \\ \frac{\eta & \zeta & 0 & 1}{\mu & \zeta & 1 & 0} \end{bmatrix}$ 13.25 $E \times E$ $\frac{E E}{\alpha} = \begin{bmatrix} A_1 & B_1 & B_2 & A_2 \\ \alpha & \gamma & \zeta & \zeta & \beta \end{bmatrix}$ $\frac{\eta}{\eta} = \begin{bmatrix} \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} & 0 & 0 \\ \eta & \mu & 0 & 0 & 0 & \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \\ \mu & \mu & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 0 & 0 \end{bmatrix}$ 14.1 $A_1 \times A_1$ $\frac{A_1}{\alpha} = \begin{bmatrix} A_1 & A_1 & A_1 \\ \frac{A_1}{\alpha} & \alpha & 1 \end{bmatrix}$ 14.2 $A_1 \times B_1$ $\frac{A_1}{\alpha} = \begin{bmatrix} A_1 & B_1 & B_1 \\ \frac{A_1}{\alpha} & \alpha & 1 \end{bmatrix}$ 14.2 $A_1 \times B_1$

14	4.4	A	$_1 \times B$)	
_			•	2	
	$\frac{A_1}{\alpha}$	$\frac{D_2}{\zeta}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		
			$1 \times E$	Z .	
	A_1	E	$ \begin{array}{ccc} E & & \\ $		
	$\frac{\alpha}{\alpha}$	$\eta \ \mu$	1 0 0 1		
14			$_{1}$ \times A	1	
	B_1	A_1	$\frac{\mid B_1 \mid}{\gamma}$		
1.			$\frac{1}{1} imes B$,	
1.			_	1	
	$\frac{B_1}{\gamma}$	$\frac{B_1}{\gamma}$	$\begin{vmatrix} A_1 \\ \alpha \end{vmatrix}$		
1	4.8	$B_{\underline{i}}$	$_1 \times A$	2	
	B_1	A_2	$\begin{array}{c c} B_2 \\ \zeta \\ \hline 1 \end{array}$		
1.				•	
14			$A_1 \times B$	2	
	$\frac{B_1}{\gamma}$	$\frac{B_2}{\zeta}$	$\begin{array}{c c} A_2 \\ \beta \\ \hline \end{array}$		
14	4.10	ŀ	$B_1 \times I$	E	
	B_1	E	$ \begin{array}{ccc} E & & \\ \eta & \mu & \\ \hline 0 & 1 \\ 1 & 0 & \\ \end{array} $		
	$\gamma \\ \gamma$	$\left. egin{array}{c} \eta \ \mu \end{array} \right $	0 1 1 0		
14			$\lambda_2 \times A$	4_1	
	A_2	A_1	A_2 β 1		
14			$\lambda_2 imes B$	3,	
_ 1				1	
	β	$\frac{-1}{\gamma}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		
14			$\mathbb{L}_2 \times \mathbb{A}$	A_2	
	$\frac{A_2}{\beta}$	$\frac{A_2}{\beta}$	A_1 α 1		
14			$\lambda_2 \times B$	B_2	
	A_2	B_2	$\begin{array}{c c} B_1 \\ \gamma \\ \hline & 1 \end{array}$		
1				D.	
			$A_2 \times A_2$	עיו	
_	$\frac{A_2}{\beta}$	$\frac{E \mid \eta}{\eta \mid 0}$	$\begin{bmatrix} E & \mu & \mu & 0 \\ 0 & -1 & 0 \end{bmatrix}$		
		•	$B_2 \times A$	4_1	
	B_2	A_1	$\begin{vmatrix} B_2 \\ \zeta \end{vmatrix}$		
14			$B_2 \times B_2 \times B_2$	\mathcal{S}_1	
	$\frac{B_2}{\zeta}$	$\frac{B_1}{\gamma}$	$\begin{array}{c c} A_2 \\ \beta \\ \hline \end{array}$		
14	.18	E	$B_2 \times A$	4_2	
	B_2	A_2	$\begin{array}{ c c c c } B_1 \\ \hline \gamma \\ \hline \end{array}$		
14			$B_2 imes B_2$	3.	
17		B_2	_	۷	
		$\frac{D_2}{\zeta}$			
			$B_2 \times B_2$	E	
_	$\frac{B_2}{\zeta}$	$\frac{E \mid \eta}{\eta \mid 1}$	$ \begin{array}{ccc} E & \mu \\ 0 & \mu \\ 0 & -1 \end{array} $		
		•	$E \times A$	L	
				-1	
	$\frac{\mathcal{L}}{\eta}$	α	$ \begin{array}{ccc} E & & \\ \eta & \mu \\ \hline 1 & 0 \\ \hline 0 & 1 \end{array} $		
			$0 1$ $E \times E$	3 1	
				' 1	
	η	γ γ	$ \begin{array}{ccc} E & & \\ $		
			$E \times A$	l_2	
			$\frac{E}{\rho} \frac{\mu}{-1}$		
_	η μ	$\beta \mid 0$ $\beta \mid 1$	0 -1		
		•	$E \times E$	\mathbf{S}_2	
	E I	$B_2 \mid \frac{B}{\eta}$			
_		$\frac{\zeta}{\zeta} = 1$			
1	4.25	5	$E \times B$	\equiv	
E E	$\begin{vmatrix} A_1 \\ \alpha \end{vmatrix}$	$\begin{vmatrix} B_1 \\ \gamma \end{vmatrix}$	B_2 ζ	A_2 β	
$egin{array}{ccc} \eta & \eta & \eta & \mu &$	$\begin{bmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{bmatrix}$	$\begin{array}{ c c }\hline 0\\ \frac{\sqrt{2}}{2}\\ \hline \end{array}$	$\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	$0\\ -\frac{\sqrt{2}}{2}$	
μ η	0	$\frac{\sqrt{2}}{2}$	0	$\frac{\sqrt{2}}{2}$	

15 Group D_{Ah}
15 Group D_{4h} 15.1 $A_{1q} \times A_{1q}$
$egin{array}{c c} A_{1g} & A_{1g} & A_{1g} \ \hline A_{0g} & \alpha_{0g} & 1 \ \hline \end{array}$
$egin{array}{c ccc} lpha_g & lpha_g & 1 \\ 15.2 & A_{1g} imes A_{2g} \end{array}$
A_{1g} A_{2g} β_g
$egin{array}{c cccc} \hline lpha_g & eta_g & 1 \\ \hline egin{array}{c cccc} egin{array}{c} A_{1g} imes B_{2g} \end{array}$
$ \begin{array}{c c} A_{1g} & B_{2g} & B_{2g} \\ \hline \alpha_g & \zeta_g & 1 \end{array} $
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$egin{array}{c c} A_{1g} & A_{2u} & A_{2u} \ \hline lpha_g & eta_u & 1 \end{array}$
15.5 $A_{1g} imes B_{2u}$
$\begin{array}{c cc} A_{1g} & B_{2u} & B_{2u} \\ \hline \alpha_g & \zeta_u & 1 \end{array}$
15.6 $A_{1g} \times B_{1u}$
$ \begin{array}{c cccc} A_{1g} & B_{1u} & B_{1u} \\ \hline \alpha_g & \gamma_u & 1 \end{array} $
15.7 $A_{1g} \times A_{1u}$
$\begin{array}{c cccc} A_{1g} & A_{1u} & A_{1u} \\ \hline \alpha_g & \alpha_u & 1 \end{array}$
15.8 $A_{1g} \times B_{1g}$
$\begin{array}{c cc} A_{1g} & B_{1g} & B_{1g} \\ \hline \alpha_g & \gamma_g & 1 \end{array}$
15.9 $A_{1g} \times E_u$
$\begin{array}{c cccc} A_{1g} & E_u & E_u \\ \hline \alpha_g & \eta_u & 1 & 0 \\ \alpha_g & \mu_u & 0 & 1 \end{array}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$egin{array}{c ccc} A_{1g} & E_g & E_g \ \hline lpha_g & \eta_g & \mu_g \ \hline lpha_g & \mu_g & 0 & 1 \ \hline \end{array}$
$egin{array}{cccc} lpha_g & \eta_g & 1 & 0 \ lpha_g & \mu_g & 0 & 1 \ \end{array}$ $egin{array}{ccccc} oldsymbol{15.11} & A_{2g} imes A_{1g} \end{array}$
$\frac{A_{2g} A_{1g} \mid A_{2g}}{\beta_g \alpha_g \mid 1}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c c} -g & 2g \\ \hline A_{2g} & A_{2g} & \alpha_g \\ \hline \beta_g & \beta_g & 1 \end{array}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c c} A_{2g} & B_{2g} & B_{1g} \\ \hline \beta_g & \zeta_g & 1 \end{array}$
15.14 $A_{2g} \times A_{2u}$
$\begin{array}{c cc} A_{2g} & A_{2u} & A_{1u} \\ \hline \beta_g & \beta_u & 1 \end{array}$
15.15 $A_{2g} \times B_{2u}$
$ \begin{array}{c cc} A_{2g} & B_{2u} & B_{1u} \\ \hline \beta_g & \zeta_u & 1 \end{array} $
15.16 $A_{2g} \times B_{1u}$
$ \begin{array}{c cc} A_{2g} & B_{1u} & B_{2u} \\ \hline \beta_g & \gamma_u & 1 \end{array} $
15.17 $A_{2g} \times A_{1u}$
$\begin{array}{c cccc} A_{2g} & A_{1u} & A_{2u} \\ \hline \beta_g & \alpha_u & 1 \end{array}$
15.18 $A_{2g} \times B_{1g}$
$\begin{array}{c c} A_{2g} & B_{1g} & B_{2g} \\ \hline \beta_g & \gamma_g & 1 \end{array}$
15.19 $A_{2g} \times E_u$ $A_{2g} = E_u \begin{vmatrix} E_u \\ \eta_u & \mu_u \end{vmatrix}$
$\begin{array}{c cccc} & E_u \\ A_{2g} & E_u & \eta_u & \mu_u \\ \hline \beta_g & \eta_u & 0 & -1 \\ \beta_g & \mu_u & 1 & 0 \end{array}$
$15.20 A_{2g} \times E_g$
$egin{array}{c ccc} A_{2g} & E_g & E_g & \eta_g & \mu_g \ \hline eta_g & \eta_g & 0 & -1 \ eta_g & \mu_g & 1 & 0 \ \hline \end{array}$
15.21 $B_{2g} \times A_{1g}$
$ \begin{array}{c cccc} B_{2g} & A_{1g} & B_{2g} \\ \hline \zeta_g & \alpha_g & 1 \end{array} $
$15.22 B_{2g} \times A_{2g}$ $\begin{vmatrix} B_{1g} \end{vmatrix}$
$\begin{array}{c c} B_{2g} & A_{2g} & \beta_{1g} \\ \hline \zeta_g & \beta_g & 1 \end{array}$
15.23 $B_{2g} \times B_{2g}$
$\begin{array}{c c} B_{2g} & B_{2g} & A_{1g} \\ \hline \zeta_g & \zeta_g & 1 \end{array}$

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15.24 B_{2g} \times A_{2u}

\begin{array}{c|cc}
B_{2g} & A_{2u} & \gamma_u \\
\hline
\zeta_g & \beta_u & 1
\end{array}

15.25 B_{2g} \times B_{2u}

\begin{array}{c|cc}
B_{2g} & B_{2u} & \alpha_u \\
\hline
\zeta_g & \zeta_u & 1
\end{array}

15.26 B_{2g} \times B_{1u}

\begin{array}{c|cc}
B_{2g} & B_{1u} & \beta_{u} \\
\hline
\zeta_{g} & \gamma_{u} & 1
\end{array}

15.27 B_{2g} \times A_{1u}

\begin{array}{c|cc}
B_{2g} & A_{1u} & \zeta_u \\
\hline
\zeta_g & \alpha_u & 1
\end{array}

15.28 B_{2g} \times B_{1g}

\begin{array}{c|cc}
B_{2g} & B_{1g} & \beta_g \\
\hline
\zeta_g & \gamma_g & 1
\end{array}

  15.29 B_{2g} \times E_u
  \begin{array}{c|ccc} B_{2g} & E_u & E_u \\ \hline \zeta_g & \eta_u & 0 & 1 \\ \zeta_g & \mu_u & 1 & 0 \end{array}
  15.30 B_{2g} \times E_g
   \begin{array}{c|ccc} B_{2g} & E_g & E_g \\ \hline \zeta_g & \eta_g & 0 & 1 \\ \zeta_g & \mu_g & 1 & 0 \end{array}
15.31 A_{2u} \times A_{1g}

\begin{array}{c|cc}
A_{2u} & A_{1g} & \beta_{u} \\
\hline
\beta_{u} & \alpha_{g} & 1
\end{array}

15.32 A_{2u} \times A_{2g}

\begin{array}{c|cc}
A_{2u} & A_{2g} & A_{1u} \\
\hline
\beta_u & \beta_g & 1
\end{array}

15.33 A_{2u} \times B_{2g}
        \begin{array}{c|c} A_{2u} & B_{2g} & \beta_{1u} \\ \hline \beta_u & \zeta_g & 1 \end{array}
15.34 A_{2u} \times A_{2u}

\begin{array}{c|cccc}
A_{2u} & A_{2u} & A_{1g} \\
\hline
A_{0g} & A_{0g} & A_{0g}
\end{array}

15.35 A_{2u} \times B_{2u}

\begin{array}{c|cc}
A_{2u} & B_{2u} & B_{1g} \\
\hline
\beta_u & \zeta_u & 1
\end{array}

15.36 A_{2u} \times B_{1u}

\begin{array}{c|cc}
A_{2u} & B_{1u} & S_{2g} \\
\hline
\beta_u & \gamma_u & 1
\end{array}

15.37 A_{2u} \times A_{1u}
      \begin{array}{c|cc} A_{2u} & A_{1u} & A_{2g} \\ \hline A_{0u} & A_{1u} & B_{g} \\ \hline \beta_{u} & \alpha_{u} & 1 \end{array}
15.38 A_{2u} \times B_{1g}

\begin{array}{c|cc}
A_{2u} & B_{1g} & B_{2u} \\
\hline
\beta_u & \gamma_g & 1
\end{array}

  15.39 A_{2u} \times E_u
    \begin{array}{c|ccc} A_{2u} & E_u & E_g \\ \hline A_{0u} & E_u & \eta_g & \mu_g \\ \hline \beta_u & \eta_u & 1 & 0 \\ \beta_u & \mu_u & 0 & 1 \\ \hline \end{array}
  15.40 A_{2u} \times E_g
   \begin{array}{c|ccc} A_{2u} & E_g & E_u \\ \hline A_{2u} & E_g & \eta_u & \mu_u \\ \hline \beta_u & \eta_g & 1 & 0 \\ \beta_u & \mu_g & 0 & 1 \\ \hline \end{array}
15.41 B_{2u} \times A_{1g}

\begin{array}{c|cc}
B_{2u} & A_{1g} & S_{2u} \\
\hline
\zeta_u & \alpha_g & 1
\end{array}

15.42 B_{2u} \times A_{2g}
       \begin{array}{c|c} B_{2u} & A_{2g} & \beta_{1u} \\ \hline \zeta_u & \beta_g & 1 \end{array}
15.43 B_{2u} \times B_{2g}

\begin{array}{c|cc}
B_{2u} & B_{2g} & A_{1u} \\
\hline
\zeta_u & \zeta_g & 1
\end{array}

15.44 B_{2u} \times A_{2u}

\begin{array}{c|cc}
B_{2u} & A_{2u} & \beta_{1g} \\
\hline
\zeta_u & \beta_u & 1
\end{array}

15.45 B_{2u} \times B_{2u}
      \begin{array}{c|cc} B_{2u} & B_{2u} & A_{1g} \\ \hline \zeta_u & \zeta_u & 1 \end{array}
15.46 B_{2u} \times B_{1u}
      \begin{array}{c|cc} B_{2u} & B_{1u} & A_{2g} \\ \hline \zeta_u & \gamma_u & 1 \end{array}
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15.47 B_{2u} \times A_{1u}

\begin{array}{c|cc}
B_{2u} & A_{1u} & S_{2g} \\
\hline
\zeta_u & \alpha_u & 1
\end{array}

15.48 B_{2u} \times B_{1g}

\begin{array}{c|cc}
B_{2u} & B_{1g} & A_{2u} \\
\hline
\zeta_u & \gamma_g & 1
\end{array}

  15.49 B_{2u} \times E_u
  \begin{array}{c|cccc} B_{2u} & E_u & E_g \\ \hline \zeta_u & \eta_u & 1 & 0 \\ \zeta_u & \mu_u & 0 & -1 \end{array}
  15.50 B_{2u} \times E_g

\begin{array}{c|cccc}
B_{2u} & E_g & E_u \\
\hline
\zeta_u & \eta_g & 1 & 0 \\
\zeta_u & \mu_g & 0 & -1
\end{array}

 15.51 B_{1u} \times A_{1g}

\begin{array}{c|cc}
B_{1u} & A_{1g} & \beta_{1u} \\
\hline
\gamma_u & \alpha_g & 1
\end{array}

 15.52 B_{1u} \times A_{2g}

\begin{array}{c|cc}
B_{1u} & A_{2g} & \beta_{2u} \\
\hline
\gamma_u & \beta_g & 1
\end{array}

15.53 B_{1u} \times B_{2g}

\begin{array}{c|cc}
B_{1u} & B_{2g} & A_{2u} \\
\hline
\gamma_u & \zeta_g & 1
\end{array}

15.54 B_{1u} \times A_{2u}

\begin{array}{c|cc}
B_{1u} & A_{2u} & B_{2g} \\
\hline
\gamma_u & \beta_u & 1
\end{array}

15.55 B_{1u} \times B_{2u}
       \begin{array}{c|cc} B_{1u} & B_{2u} & A_{2g} \\ \hline \gamma_u & \zeta_u & 1 \end{array}
15.56 B_{1u} \times B_{1u}
         \begin{array}{c|cc} B_{1u} & B_{1u} & A_{1g} \\ \hline \gamma_u & \gamma_u & 1 \end{array}
15.57 B_{1u} \times A_{1u}

\begin{array}{c|cc}
B_{1u} & A_{1u} & \beta_{1g} \\
\hline
\gamma_u & \alpha_u & 1
\end{array}

15.58 B_{1u} \times B_{1g}
       \begin{array}{c|c} B_{1u} & B_{1g} & A_{1u} \\ \hline \gamma_u & \gamma_g & 1 \end{array}
 15.59 B_{1u} \times E_u

\begin{array}{c|cccc}
B_{1u} & E_u & E_g \\
\hline
\gamma_u & \eta_u & 0 & 1 \\
\gamma_u & \mu_u & 1 & 0
\end{array}

  15.60 B_{1u} \times E_g

\begin{array}{c|cccc}
B_{1u} & E_g & E_u \\
\hline
\gamma_u & \eta_g & 0 & 1 \\
\gamma_u & \mu_g & 1 & 0
\end{array}

 15.61 A_{1u} \times A_{1g}

\begin{array}{c|cc}
A_{1u} & A_{1g} & A_{1u} \\
\hline
\alpha_u & \alpha_g & 1
\end{array}

 15.62 A_{1u} \times A_{2g}

\begin{array}{c|cc}
A_{1u} & A_{2g} & A_{2u} \\
\hline
\alpha_u & \beta_g & 1
\end{array}

 15.63 A_{1u} \times B_{2g}

\begin{array}{c|cc}
A_{1u} & B_{2g} & \zeta_u \\
\hline
\alpha_u & \zeta_g & 1
\end{array}

15.64 A_{1u} \times A_{2u}
         \begin{array}{c|cc} A_{1u} & A_{2u} & A_{2g} \\ \hline A_{0u} & \beta_{0u} & 1 \end{array}
 15.65 A_{1u} \times B_{2u}
       \begin{array}{c|cc} A_{1u} & B_{2u} & B_{2g} \\ \hline \alpha_u & \zeta_u & 1 \end{array}
15.66 A_{1u} \times B_{1u}

\begin{array}{c|cc}
A_{1u} & B_{1u} & B_{1g} \\
\hline
A_{u} & \gamma_{u} & 1
\end{array}

 15.67 A_{1u} \times A_{1u}
          \begin{array}{c|cc} A_{1u} & A_{1u} & A_{1g} \\ \hline A_{0u} & \alpha_{0u} & 1 \end{array}
 15.68 A_{1u} \times B_{1g}
        \begin{array}{c|c} A_{1u} & B_{1g} & \beta_{1u} \\ \hline A_{0u} & \gamma_{0} & 1 \end{array}
  15.69 A_{1u} \times E_u
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 $\begin{array}{c|ccc} A_{1u} & E_u & E_g \\ \hline A_{1u} & E_u & \eta_g & \mu_g \\ \hline \alpha_u & \eta_u & 0 & -1 \\ \alpha_u & \mu_u & 1 & 0 \\ \hline \end{array}$

15.70 $A_{1u} \times E_g$
$egin{array}{c cccc} A_{1u} & E_g & E_u & & & & & & & & & & & & & & & & & & &$
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c cc} B_{1g} & A_{1g} & B_{1g} \\ \hline \gamma_g & \alpha_g & 1 \end{array}$
15.72 $B_{1g} \times A_{2g}$
$egin{array}{c c} B_{1g} & A_{2g} & B_{2g} \ \hline \gamma_g & eta_g & 1 \end{array}$
15.73 $B_{1g} \times B_{2g}$ $B_{1g} = \begin{bmatrix} A_{2g} \\ \beta_{g} \end{bmatrix}$
$egin{array}{c c} B_{1g} & B_{2g} & A_{2g} \ \hline \gamma_g & \zeta_g & 1 \end{array}$ $egin{array}{c c} 15.74 & B_{1g} imes A_{2u} \end{array}$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
γ_g β_u 1 15.75 $B_{1g} imes B_{2u}$
$\begin{array}{c cc} B_{1g} & B_{2u} & A_{2u} \\ \hline \gamma_g & \zeta_u & 1 \end{array}$
15.76 $B_{1g} \times B_{1u}$
$ \begin{array}{c cc} B_{1g} & B_{1u} & \alpha_u \\ \hline \gamma_g & \gamma_u & 1 \end{array} $
15.77 $B_{1g} \times A_{1u}$ $\frac{B_{1g} A_{1u} \mid \begin{array}{c c} B_{1u} \\ \gamma_u \end{array}}{\gamma_g \alpha_u \mid 1}$
γ_g α_u 1 15.78 $B_{1g} \times B_{1g}$
$egin{array}{c c} B_{1g} & B_{1g} & A_{1g} \ \hline \gamma_g & \gamma_g & 1 \end{array}$
15.79 $B_{1g} \times E_u$
$\begin{array}{c cccc} B_{1g} & E_u & E_u \\ \hline \gamma_g & \eta_u & 1 & 0 \\ \gamma_g & \mu_u & 0 & -1 \end{array}$
15.80 $B_{1g} \times E_g$
$egin{array}{c cccc} B_{1g} & E_g & E_g & \mu_g \ \hline \gamma_g & \eta_g & 1 & 0 \ \gamma_g & \mu_g & 0 & -1 \ \hline \end{array}$
15.81 $E_u \times A_{1g}$
$ \begin{array}{c cccc} E_u & A_{1g} & E_u \\ \hline \eta_u & \alpha_g & 1 & 0 \\ \hline \mu_u & \alpha_g & 0 & 1 \end{array} $
15.82 $E_u \times A_{2g}$
$\begin{array}{c cccc} E_u & A_{2g} & E_u \\ \hline \eta_u & \beta_g & 0 & -1 \\ \hline \mu_u & \beta_g & 1 & 0 \\ \hline \end{array}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$ \begin{array}{c cccc} E_u & B_{2g} & E_u \\ \hline \eta_u & \zeta_g & 0 & 1 \\ \hline \mu_u & \zeta_g & 1 & 0 \end{array} $
μ_u ζ_g 1 0 15.84 $E_u \times A_{2u}$
$ \begin{array}{c cccc} E_u & A_{2u} & E_g \\ \hline \eta_u & \beta_u & 1 & 0 \end{array} $
$ \begin{array}{c cccc} \hline \mu_u & \beta_u & 0 & 1 \end{array} $ $ 15.85 & E_u \times B_{2u} $
$ \begin{array}{c cccc} E_u & B_{2u} & E_g \\ \hline \eta_u & \zeta_u & 1 & 0 \end{array} $
μ_u ζ_u 0 -1 $15.86 E_u \times B_{1u}$
$ \begin{array}{c cccc} E_u & B_{1u} & E_g \\ \hline \eta_u & \gamma_u & 0 & 1 \end{array} $
$ \begin{array}{c cccc} \hline \mu_u & \gamma_u & 1 & 0 \end{array} $ $ 15.87 & E_u \times A_{1u} $
$\begin{array}{c cccc} E_u & A_{1u} & E_g \\ \hline P_u & A_{1u} & P_g & P_g \\ \hline P_u & P_u & P_u & P_u & P_u \\ \hline \end{array}$
μ_u α_u 1 0 15.88 $E_u \times B_{1g}$
$ \begin{array}{c cccc} E_u & B_{1g} & E_u \\ \hline \eta_u & \gamma_g & 1 & 0 \end{array} $
$\frac{\gamma_u}{\mu_u} \gamma_g \mid 0 -1$ $15.89 E_u \times E_u$
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $

				$\times E_g$	
E_u	E_{a}	B_{2u} ζ_u	$\begin{vmatrix} B_{1u} \\ \gamma_u \end{vmatrix}$	A_{1u} α_u	A_{2u} β_u
η_u	η_g	$-\frac{\sqrt{2}}{2}$	$0 \over \sqrt{2}$	$\begin{bmatrix} 0 \\ -\sqrt{2} \end{bmatrix}$	$\frac{\sqrt{2}}{2}$
$\frac{\eta u}{\mu_u}$	$\frac{\mu_g}{\eta_g}$	0	$\frac{1}{2}$	$\begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix} = 0$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	
μ_u					
			v	$\times A_{1g}$	1
		$egin{array}{ccc} E_g & A_{1g} \ \hline lpha_g & lpha_g \ \hline lpha_g & lpha_g \end{array}$	$\frac{g \mid \eta_g}{\mid 1}$	$\frac{\mu_g}{0}$	
	μ	α_g α_g	0	1	
				$\times A_{2g}$	1
	E	$\frac{G_g}{g} = \frac{A_{2g}}{\beta_g}$	E_g	μ_g	
	$\frac{\eta}{\mu}$	$\frac{g}{g} \frac{\beta_g}{\beta_g}$	0 1	$\frac{-1}{0}$	
	15.	.93	E_q :	$\times B_{2g}$	1
		$E_g B_{2g}$	Ü		,
	7	ζ_g ζ_g	0	1	
		$\zeta_g = \zeta_g$	•		
			v	$\times A_{2v}$	ι
	$\frac{E}{\eta}$	$ \begin{bmatrix} G_g & A_{2u} \\ g & \beta_u \end{bmatrix} $	$\frac{1}{1}$	$\frac{\mu_u}{0}$	
	μ	β_u	0	1	
				$\times B_{2v}$	ι
	E	$ \begin{array}{ccc} \zeta_g & B_{2u} \\ g & \zeta_u \\ g & \zeta_u \end{array} $	$ \begin{array}{c c} E_u \\ \eta_u \end{array} $	μ_u	
	$\frac{\eta}{\mu}$	$\frac{g}{g}$ $\frac{\zeta_u}{\zeta_u}$	1 0	$\frac{0}{-1}$	
				$\times B_{1u}$	ι
	E	$G_g B_{1i}$	$ \begin{bmatrix} E_u \\ \eta_u \end{bmatrix} $	μ_u	
	$\frac{\eta}{\eta}$	$\frac{\Gamma_g}{g} = \frac{B_{1u}}{\gamma_u}$ $\frac{g}{g} = \frac{\gamma_u}{\gamma_u}$	0	1	
				$\times A_{1i}$	
			·		ι
	$\frac{E}{\eta}$	$\begin{cases} A_{1u} \\ g \end{cases} = \begin{cases} \alpha_u \\ g \end{cases} = \begin{cases} \alpha_u \end{cases}$	$\frac{u \mid \eta_u}{\mid 0}$	$\frac{\mu_u}{-1}$	
	μ	$g \alpha_u$	1	0	
				$\times B_{1g}$	1
		$S_g B_{1g}$	$\frac{E_g}{\eta_g}$	$\frac{\mu_g}{0}$	
	$\frac{\eta}{\mu}$	$\frac{g}{g}$ $\frac{\gamma_g}{\gamma_g}$		-1	
				$\times E_u$	
E_g	E_u	$B_{2u} \\ \zeta_u$	$\begin{vmatrix} B_{1u} \\ \gamma_u \end{vmatrix}$	$\begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix}$	$\begin{vmatrix} A_{2u} \\ \beta_u \end{vmatrix}$
		$-\sqrt{2}$		I 0	$\frac{\sqrt{2}}{2}$
$\eta_g \ \eta_g$	$\eta_u \ \mu_u$	0	$\frac{0}{\sqrt{2}}$	$-\frac{\sqrt{2}}{2}$	$\begin{bmatrix} 2 \\ 0 \end{bmatrix}$
η_g η_g μ_g	η_u μ_u η_u	$\begin{array}{c} 2 \\ 0 \\ \hline 0 \\ \hline \sqrt{2} \\ \end{array}$	$\begin{array}{ c c } \hline 0 \\ \hline \frac{\sqrt{2}}{2} \\ \hline \hline \frac{\sqrt{2}}{2} \\ \hline 0 \\ \hline \end{array}$	$ \begin{array}{c c} 0 \\ -\frac{\sqrt{2}}{2} \\ \hline 0 \end{array} $	$\begin{array}{ c c }\hline & 2\\ \hline & 0\\ \hline & \\ \hline \end{array}$
$egin{array}{c} \eta_g \ \eta_g \ \hline \mu_g \ \mu_g \end{array}$				$\begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix} = \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	
	15.	100	E_g	$\times E_{g}$	g
	15.	100	E_g	$\times E_{g}$	g
	15.	100	E_g	$\times E_{g}$	g
	15.	100	E_g		g
	E_g η_g μ_g η_g μ_g	$ \begin{array}{c c} 100 \\ A_{2g} \\ \beta_g \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{array} $	$E_g \begin{vmatrix} B_{1g} \\ \gamma_g \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	$\begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & 0 \\ & \frac{\sqrt{2}}{2} \\ \hline & 0 \end{array}$	g
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$ \begin{array}{c c} 100 \\ A_{2g} \\ \beta_g \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{array} $	E_g $\begin{vmatrix} B_{1g} \\ \gamma_g \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	$ imes E_{g} \ rac{\left egin{array}{c} B_{2g} \ \zeta_{g} \ \end{array} ight }{\left egin{array}{c} 0 \ rac{\sqrt{2}}{2} \ 0 \ \end{array} ight }$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & & & A_{2g} & & & & & & & & & & & & & & & & & & &$	E_g $\begin{vmatrix} B_{1g} \\ \gamma_g \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	$\begin{array}{c} \times E_{g} \\ \begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix} \\ \hline \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix} \\ \mathbf{up} \\ \times A \end{array}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & & & & & & & & & & & & & & & & & &$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > A$ $\begin{vmatrix} A \\ \alpha \\ \alpha \end{vmatrix} = A$	$ \begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & 0 \\ \hline & \frac{\sqrt{2}}{2} \\ \hline & 0 \end{array} $ $ \begin{array}{c c} \mathbf{up} \\ \times A \end{array} $	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & A_{2g} & B_g & 0 \ \hline 0 & -rac{\sqrt{2}}{2} & 0 & \end{array} \ egin{array}{c c} G.1 & A & \hline lpha & & \end{array}$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > \frac{A \mid A}{\alpha \mid 1}$ $A \times A = \frac{A \mid A}{\alpha \mid 1}$	$ \begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & 0 \\ \hline & \frac{\sqrt{2}}{2} \\ \hline & 0 \end{array} $ $ \begin{array}{c c} \mathbf{up} \\ \times A \\ \hline & C E^{1} \\ \end{array} $	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & A_{2g} & B_g & 0 \ \hline 0 & -rac{\sqrt{2}}{2} & 0 & \end{array} \ egin{array}{c c} G.1 & A & \hline lpha & & \end{array}$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > \frac{A \mid A}{\alpha \mid 1}$ $A \times A = \frac{A \mid A}{\alpha \mid 1}$	$ \begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & 0 \\ \hline & \frac{\sqrt{2}}{2} \\ \hline & 0 \end{array} $ $ \begin{array}{c c} \mathbf{up} \\ \times A \\ \hline & C E^{1} \\ \end{array} $	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & A_{2g} & B_g & 0 \ \hline 0 & -rac{\sqrt{2}}{2} & 0 & \end{array} \ egin{array}{c c} G.1 & A & \hline lpha & & \end{array}$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > \frac{A \mid A}{\alpha \mid 1}$ $A \times \frac{E^{1} \mid B}{\beta \mid 1}$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A$ $+ C \cdot E^{1}$ $+ C \cdot E^{1}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & A_{2g} & B_g & 0 \ \hline 0 & -rac{\sqrt{2}}{2} & 0 & \end{array} \ egin{array}{c c} G & .1 & A & A \ \hline & & & & A & A \ \hline & & & & & A & A \ \hline & & & & & & A & A \ \hline & & & & & & & A & A \ \hline & & & & & & & & A & A \ \hline & & & & & & & & & & A & A \ \hline & & & & & & & & & & & A \ \hline & & & & & & & & & & & & & & & & & &$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > A$ $A \begin{vmatrix} A \\ \alpha \\ \alpha \end{vmatrix} = A$ $A > A$ $A \Rightarrow A$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A$ $\times E^{1}$ $\times E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g	$egin{array}{c c} 100 & A_{2g} & B_g & 0 \ \hline 0 & -rac{\sqrt{2}}{2} & 0 & \end{array} \ egin{array}{c c} G & .1 & A & A \ \hline & & & & A & A \ \hline & & & & & A & A \ \hline & & & & & & A & A \ \hline & & & & & & & A & A \ \hline & & & & & & & & A & A \ \hline & & & & & & & & & & A & A \ \hline & & & & & & & & & & & A \ \hline & & & & & & & & & & & & & & & & & &$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > \frac{A \mid A}{\alpha \mid 1}$ $A \times \frac{E^{1} \mid B}{\beta \mid 1}$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A$ $\times E^{1}$ $\times E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g	$egin{array}{c c} 100 & A_{2g} & B_g & 0 \ \hline 0 & -rac{\sqrt{2}}{2} & 0 & \end{array} \ egin{array}{c c} G & .1 & A & A \ \hline & & & & A & A \ \hline & & & & & A & A \ \hline & & & & & & A & A \ \hline & & & & & & & A & A \ \hline & & & & & & & & A & A \ \hline & & & & & & & & & & A & A \ \hline & & & & & & & & & & & A \ \hline & & & & & & & & & & & & & & & & & &$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \\ 0 \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $A > \frac{A \mid A}{\alpha \mid 1}$ $A \times \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A \times \frac{E^{2} \mid \gamma}{\gamma \mid 1}$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A$ $+ C \cdot E^{1}$ $\cdot C \cdot E^{2}$ $\cdot C \cdot E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g	$egin{array}{c} 100 \ egin{array}{c} A_{2g} \ eta_g \ \end{bmatrix} \ egin{array}{c} 0 \ -rac{\sqrt{2}}{2} \ 0 \ \end{bmatrix} \ egin{array}{c} G \ \vdots \ \end{array} \ egin{array}{c} A & B \ \hline lpha \ \ A \ \ \end{array} \ \ egin{array}{c} A & B \ \hline lpha \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \\ \frac{1}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $A > A$ $A \begin{vmatrix} A \\ \alpha \\ \alpha \end{vmatrix} = A$ $A > B$ $A > B$ $A > C$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A$ $\times A$ $\times E^{1}$ $\times E^{2}$ $\times A$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	E_g η_g μ_g η_g μ_g 1	$egin{array}{c c} 100 & A_{2g} & B_g & O \ \hline A_{2g} & B_g & O \ \hline O & -rac{\sqrt{2}}{2} & O & O \ \hline & G & O & O$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > \frac{A \mid A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} \qquad A \mid \beta$ $\alpha \mid 1$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A$ $\times E^{1}$ $\times E^{2}$ $\times A$ \vdots \vdots \vdots \vdots	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \\ \end{vmatrix}$ $A > \frac{A \cdot A}{\alpha \mid 1}$ $A > \frac{A \cdot A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{A \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{A \mid \beta}{\alpha \mid 1}$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $\downarrow \Phi$ $\times A$ $\downarrow E^{1}$ $\times E^{2}$ $\times A$ $\downarrow E^{2}$ $\times A$ $\downarrow E^{2}$ $\times E^{2}$ $\times E^{2}$ $\times E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_g & O \ \hline A_{2g} & B_g & O \ \hline O & -rac{\sqrt{2}}{2} & O & O \ \hline & G & O & O$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \\ \end{vmatrix}$ $A > \frac{A \cdot A}{\alpha \mid 1}$ $A > \frac{A \cdot A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{A \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{A \mid \beta}{\alpha \mid 1}$	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $\downarrow \Phi$ $\times A$ $\downarrow E^{1}$ $\times E^{2}$ $\times A$ $\downarrow E^{2}$ $\times A$ $\downarrow E^{2}$ $\times E^{2}$ $\times E^{2}$ $\times E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > \frac{A \mid A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{A \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$	$\begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & \zeta_{g} \\ \hline & 0 \\ \hline & \frac{\sqrt{2}}{2} \\ \hline & 0 \\ \end{array}$ $\begin{array}{c c} \mathbf{UP} \\ \times A \\ \hline & \vdots \\ &$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_{g} & A_{2g} & A_{g} & A_$	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > A > A > A > A$ $A A > A$ $A $	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $\downarrow \Phi$ $\times A$ $\downarrow E^{1}$ $\downarrow E^{2}$ $\times E^{1}$ $\downarrow E^{2}$ \downarrow	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_g & O \ \hline O & -rac{\sqrt{2}}{2} & O & O \ \hline & G & O & O \ \hline $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > A > A > A > A$ $A A > A$ $A $	$\times E_{g}$ $\begin{vmatrix} B_{2g} \\ \zeta_{g} \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ $\downarrow \Phi$ $\times A$ $\downarrow E^{1}$ $\downarrow E^{2}$ $\times E^{1}$ $\downarrow E^{2}$ \downarrow	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > \frac{A \mid A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$ $E^{2} \mid \beta$ $F^{2} \mid \beta$	$\begin{array}{c c} \times E_{g} \\ \hline \times E_{g} \\ \hline \times E_{g} \\ \hline \end{array}$ $\begin{array}{c c} & & \\ \hline & & \\ $	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & \eta_g & \mu_g & \eta_g & $	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > \frac{A \mid A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$ $E^{2} \mid \beta$ $F^{2} \mid \beta$	$\begin{array}{c c} \times E_{g} \\ \hline \times E_{g} \\ \hline \times E_{g} \\ \hline \end{array}$ $\begin{array}{c c} & & \\ \hline & & \\ $	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > A A A A A A A A A $	$\begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & \zeta_{g} \\ \hline$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > \frac{A \mid A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{E^{2} \mid \beta}{\alpha \mid 1}$ $E^{2} > \frac{E^{2} \mid \beta}{\alpha \mid 1}$	$\begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & \zeta_{g} \\ \hline & 0 \\ \hline & \sqrt{2} \\ \hline & 0 \\ \end{array}$ $\begin{array}{c c} \mathbf{UP} \\ \times A \\ & \times E^{1} \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > \frac{A \mid A}{\alpha \mid 1}$ $A > \frac{E^{1} \mid \beta}{\beta \mid 1}$ $A > \frac{E^{2} \mid \gamma}{\gamma \mid 1}$ $E^{1} > \frac{E^{1} \mid \beta}{\alpha \mid 1}$ $E^{1} > \frac{E^{2} \mid \beta}{\alpha \mid 1}$ $E^{2} > \frac{E^{2} \mid \beta}{\alpha \mid 1}$	$\begin{array}{c c} \times E_{g} \\ & \zeta_{g} \\ \hline & \zeta_{g} \\ \hline & 0 \\ \hline & \sqrt{2} \\ \hline & 0 \\ \end{array}$ $\begin{array}{c c} \mathbf{UP} \\ \times A \\ & \times E^{1} \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{1} \\ \hline & & \times E^{2} \\ \hline & & \times E^{2}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > A$ $A A$ $\alpha 1$ $A > E^{1} \beta$ $\beta 1$ $E^{2} \gamma$ $\gamma 1$ $E^{1} > E^{2} \gamma$ $\gamma 1$ $E^{2} \gamma$ $\gamma \gamma$ $E^{3} \gamma$ $\gamma \gamma$ $E^{2} \gamma$ $\gamma \gamma$ $\gamma \gamma$ $E^{3} \gamma$ $\gamma \gamma$ $\gamma \gamma$ $E^{1} \gamma$ $\gamma \gamma$ γ $\gamma \gamma$ γ γ $\gamma \gamma$ γ γ γ γ γ γ γ	$\begin{array}{c c} \times E_{g} \\ \hline \times E_{g} \\ \hline \downarrow \frac{S_{2g}}{\zeta_{g}} \\ \hline \downarrow \frac{S_{2g}}{\zeta_{g}} \\ \hline \downarrow 0 \\ \hline \end{array}$ $\begin{array}{c c} \mathbf{LP} \\ \times A \\ \hline \times E^{1} \\ \hline \times E^{2} \\ \hline \times A \\ \hline \end{array}$ $\begin{array}{c c} \times E^{1} \\ \hline \times E^{2} \\ \hline \times A \\ \hline \end{array}$ $\begin{array}{c c} \times E^{1} \\ \hline \times E^{2} \\ \hline \end{array}$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $
$ \begin{array}{c} E_g \\ \eta_g \\ \eta_g \\ \mu_g \\ \mu_g \end{array} $	$egin{array}{c} E_g & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} 100 & A_{2g} & B_{g} & O & O & O & O & O & O & O & O & O & $	E_{g} $\begin{vmatrix} B_{1g} \\ \gamma_{g} \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix}$ FO $A > A > A$ $A A > A$	$\begin{array}{c c} \times E_{2} \\ & \zeta_{g} \\ \hline & \zeta_{g} \\ \hline & 0 \\ \hline & \frac{\sqrt{2}}{2} \\ \hline & 0 \\ \end{array}$ $\begin{array}{c c} \mathbf{UP} \\ \times A \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & \times E^{2} \\ \hline & \times A \\ \hline & \times E^{2} \\ \hline & \times E$	$ \begin{vmatrix} A_{1g} \\ \alpha_g \\ \end{vmatrix} \frac{\sqrt{2}}{2} \\ 0 $ $ \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $

17 C	Group	S_6
	$A_q \times A_q$	\sim 0
	$ \begin{array}{c c} g & g \\ A_g & \alpha_g \\ \hline \alpha_g & 1 \end{array} $	
	$\alpha_g \mid 1$ $A_g \times A_u$	
A_g	$ \begin{array}{c c} A_u & A_u \\ \hline \alpha_u & 1 \end{array} $	
	$A_g \times E_u^1$	
A_g	$ \begin{array}{c c} E_u^1 & E_u^1 \\ \hline B_u & \beta_u \end{array} $	
	$A_g \times E_u^2$	
$\frac{A_g}{\alpha_g}$	$ \begin{array}{c c} E_u^2 & E_u^2 \\ \hline F_u^2 & \gamma_u \end{array} $	
17.5	$A_g \times E_g^2$	
$\frac{A_g}{\alpha_g}$	$ \begin{array}{c c} E_g^2 & \gamma_g \\ \hline \gamma_g & 1 \end{array} $	
17.6	$A_g \times E_g^1$	
$\frac{A_g}{\alpha_g}$	$ \begin{array}{c c} E_g^1 & E_g^1 \\ \hline \beta_g & \beta_g \end{array} $	
	$A_u \times A_g$	
$\frac{A_u}{\alpha_u}$	$ \begin{array}{c c} A_u \\ A_g & \alpha_u \\ \hline \alpha_g & 1 \end{array} $	
	$A_u \times A_u$	
$\frac{A_u}{\alpha_u}$	$ \begin{array}{c c} A_u & A_g \\ \hline A_u & 1 \end{array} $	
	$A_u \times E_u^1$ $\mid E_g^2$	
$\frac{A_u}{\alpha_u}$	$ \begin{array}{c c} E_u^1 & \gamma_g \\ \hline \beta_u & 1 \end{array} $	
	$A_u \times E_u^2$ $E_u^2 \begin{vmatrix} E_g^1 \\ \beta_g \end{vmatrix}$	
α_u	$\gamma_u \mid 1$	
	$A_u \times E_g^2$ $E_s^2 \begin{vmatrix} E_u^1 \\ \beta_u \end{vmatrix}$	
	$ \begin{array}{c c} E_g^1 & E_u^1 \\ E_g^2 & \beta_u \end{array} $	
	$A_u \times E_g^1$ $E_g^1 \mid_{\gamma_u}^{E_u^2}$ $\beta_g \mid 1$	
	$ \begin{array}{c c} \hline \beta_g \mid 1 \\ \hline E_u^1 \times A_g \end{array} $	
	$ \begin{array}{c c} & E_u^1 \\ A_g & \beta_u \end{array} $ $ \begin{array}{c c} & \alpha_g & 1 \end{array} $	
	$\alpha_g \mid 1$ $E_u^1 \times A_u$	
$\frac{E_u^1}{2}$	$ \begin{array}{c c} & E_g^2 \\ & \gamma_g \\ \hline & \alpha_u \mid 1 \end{array} $	
	$E_u^1 \times E_u^1$	
$\frac{E_u^1}{\beta_{\cdot \cdot \cdot}}$	$ \begin{array}{c c} E_u^1 & E_g^1 \\ \hline \beta_g & \beta_g \end{array} $	
	$E_u^1 \times E_u^2$	
$\frac{E_u^1}{\beta_u}$	$ \begin{array}{c c} E_u^2 & A_g \\ \hline P_u & \alpha_g \end{array} $	
17.17	$E_u^1 \times E_g^2$	
$\frac{E_u^1}{\beta_u}$	$ \begin{array}{c c} E_g^2 & \gamma_u \\ \hline \gamma_g & 1 \end{array} $	
	$E_u^1 \times E_g^1$	
$\frac{E_u^1}{\beta_u}$	$ \begin{array}{c c} E_g^1 & \alpha_u \\ \hline \beta_g & 1 \end{array} $	
	$E_u^2 \times A_g$ $\mid E_u^2$	
$\frac{E_u^2}{\gamma_u}$	$ \begin{array}{c c} A_g & E_u^2 \\ \hline A_g & \gamma_u \end{array} $	
	$E_u^2 \times A_u$	
	$ \begin{array}{c c} A_u & E_g^1 \\ \hline A_u & \beta_g \end{array} $	
	$E_u^2 \times E_u^1$ $E_u^1 \mid_{\alpha_a}^{A_g}$	
	$ \begin{array}{c c} & A_g \\ E_u^1 & \alpha_g \\ \hline \beta_u & 1 \end{array} $	
	$E_u^2 \times E_u^2$ $E_u^2 \mid_{\gamma_g}^{E_g^2}$ $\gamma_u \mid 1$	
	$\frac{-u + \eta_g}{\gamma_u \mid 1}$ $E_u^2 \times E_q^2$	
	$E_u^2 \times E_g^2$ A_u	

17.24 $E_u^2 \times E_g^1$	
$ \begin{array}{c cc} E_u^2 & E_g^1 & \beta_u \\ \hline \gamma_u & \beta_g & 1 \end{array} $	
17.25 $E_g^2 \times A_g$	
$\begin{array}{c c} E_g^2 & A_g & E_g^2 \\ \hline \gamma_g & \alpha_g & 1 \end{array}$	
17.26 $E_g^2 \times A_u$	
$ \begin{array}{c cc} E_g^2 & A_u & B_u^1 \\ \hline \gamma_g & \alpha_u & 1 \end{array} $	
17.27 $E_g^2 \times E_u^1$	
$ \begin{array}{c cc} E_g^2 & E_u^1 & Y_u \\ \hline \gamma_g & \beta_u & 1 \end{array} $	
17.28 $E_g^2 \times E_u^2$ $E_g^2 E_u^2 \mid_{\alpha_u}^{A_u}$	
$\frac{1}{\gamma_g} \gamma_u \mid 1$	
17.29 $E_g^2 \times E_g^2$	
$ \begin{array}{c cc} E_g^2 & E_g^2 & \beta_g \\ \hline \gamma_g & \gamma_g & 1 \end{array} $	
17.30 $E_g^2 \times E_g^1$ $\frac{E_g^2 E_g^1 \mid A_g \atop \alpha_g}{\gamma_g \beta_g \mid 1}$	
17.31 $E_g^1 \times A_g$ $\frac{E_g^1 A_g \mid E_g^1}{\beta_g \alpha_g \mid 1}$	
$egin{array}{c cccc} \overline{eta_g & lpha_g & 1 \ \end{array}$ 17.32 $E_q^1 imes A_u$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$eta_g lpha_u \mid \ 1$ 17.33 $E_g^1 imes E_u^1$	
$\begin{array}{c cc} E_g^1 & E_u^1 & A_u \\ \hline \beta_q & \beta_u & 1 \end{array}$	
17.34 $E_g^1 \times E_u^2$	
$\begin{array}{c c} E_g^1 & E_u^2 & E_u^1 \\ \hline \beta_q & \gamma_u & 1 \end{array}$	
17.35 $E_g^1 imes E_g^2$	
$\begin{array}{c c} E_g^1 & E_g^2 & \alpha_g \\ \hline \beta_g & \gamma_g & 1 \end{array}$	
17.36 $E_g^1 \times E_g^1$	
$ \begin{array}{c c} E_g^1 & E_g^1 & \gamma_g \\ \hline \beta_g & \beta_g & 1 \end{array} $	
18 Group I	_ ノ
18.1 $A_1 \times A_1$	
$egin{array}{c c} A_1 & A_1 & A_1 \\ \hline lpha & lpha & 1 \end{array}$	
18.2 $A_1 \times A_2$	
$\begin{array}{c cc} A_1 & A_2 & \beta \\ \hline \alpha & \beta & 1 \end{array}$	
18.3 $A_1 \times E$ $A_1 E \mid_{\gamma \zeta}^E$	
$egin{array}{c ccc} A_1 & E & E & \\ \hline lpha & \gamma & \zeta & \\ \hline lpha & \gamma & 1 & 0 \\ lpha & \zeta & 0 & 1 & \\ \hline \end{array}$	
18.4 $A_2 \times A_1$	
$\begin{array}{c cc} A_2 & A_1 & \beta \\ \hline \beta & \alpha & 1 \end{array}$	
18.5 $A_2 \times A_2$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
18.6 $A_2 \times E$ $A_2 E \mid \begin{matrix} E \\ \gamma & \zeta \end{matrix}$	
$\begin{array}{c ccc} A_2 & E & E \\ \gamma & \zeta \\ \hline \beta & \gamma & 0 & -1 \\ \beta & \zeta & 1 & 0 \end{array}$	
18.7 $E \times A_1$	
$\begin{array}{c cccc} E & A_1 & F \\ \hline \gamma & \alpha & 1 & 0 \\ \hline \zeta & \alpha & 0 & 1 \\ \end{array}$	
18.8 $E \times A_2$	
$\begin{array}{c cccc} E & A_2 & F \\ \hline \gamma & \beta & 0 & -1 \\ \hline \zeta & \beta & 1 & 0 \end{array}$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	

18.9 $E \times E$

 $\begin{array}{c|cc}
E_u^2 & E_g^2 & \alpha_u \\
\hline
\gamma_u & \gamma_g & 1
\end{array}$

Group C_{3v}

19.1 $A_1 \times A_1$ $\begin{array}{c|cccc}
A_1 & A_1 & \alpha \\
\hline
\alpha & \alpha & 1
\end{array}$

19.2 $A_1 \times A_2$

19.3 $A_1 \times E$

19.4 $A_2 \times A_1$

19.5 $A_2 \times A_2$ $\begin{array}{c|cc} A_2 & A_2 & \alpha \\ \hline \beta & \beta & 1 \end{array}$

19.6 $A_2 \times E$ $\begin{array}{c|cccc} A_2 & E & E \\ \hline A_2 & E & \gamma & \zeta \\ \hline \beta & \gamma & 0 & -1 \\ \beta & \zeta & 1 & 0 \\ \end{array}$

19.7 $E \times A_1$ $\begin{array}{c|cccc}
E & A_1 & F \\
\hline
\gamma & \alpha & 1 & 0 \\
\hline
\zeta & \alpha & 0 & 1
\end{array}$

19.8 $E \times A_2$

19.9 $E \times E$

20 Group D_{3d}

20.1 $A_{1g} \times A_{1g}$

 $\begin{array}{c|cc} A_{1g} & A_{1g} \\ \hline A_{0g} & A_{1g} & \alpha_{g} \\ \hline \alpha_{g} & \alpha_{g} & 1 \\ \end{array}$

20.2 $A_{1g} \times A_{1u}$ $\begin{array}{c|cccc}
A_{1g} & A_{1u} & A_{1u} \\
\hline
\alpha_g & \alpha_u & 1
\end{array}$

20.3 $A_{1g} \times A_{2u}$

20.4 $A_{1g} \times A_{2g}$

20.5 $A_{1g} \times E_g$

20.6 $A_{1g} \times E_u$

20.7 $A_{1u} \times A_{1g}$

20.8 $A_{1u} \times A_{1u}$

20.9 $A_{1u} \times A_{2u}$

20.10 $A_{1u} \times A_{2g}$

20.11 $A_{1u} \times E_g$

 $\begin{array}{c|ccc} A_{1u} & E_g & E_u \\ \gamma_u & \zeta_u \\ \hline \alpha_u & \gamma_g & 0 & -1 \\ \alpha_u & \zeta_g & 1 & 0 \\ \end{array}$

20.12 $A_{1u} \times E_u$ $\begin{array}{c|cccc} A_{1u} & E_u & E_g \\ \hline A_{1u} & E_u & \gamma_g & \zeta_g \\ \hline \alpha_u & \gamma_u & 0 & -1 \\ \alpha_u & \zeta_u & 1 & 0 \\ \hline \end{array}$

20.13 $A_{2u} \times A_{1g}$

 $\begin{array}{c|cc} A_{2u} & A_{1g} & A_{2u} \\ \hline A_{0u} & A_{1g} & \beta_{u} \\ \hline \beta_{u} & \alpha_{g} & 1 \end{array}$

20.14 $A_{2u} \times A_{1u}$ $\begin{array}{c|cc}
A_{2u} & A_{1u} & A_{2g} \\
\hline
\beta_u & \alpha_u & 1
\end{array}$

20.15 $A_{2u} \times A_{2u}$

 $\begin{array}{c|cc}
A_{2u} & A_{2u} & A_{1g} \\
\hline
A_{0} & A_{0} & A_{0}
\end{array}$

20.16 $A_{2u} \times A_{2g}$

 $\begin{array}{c|cc} A_{2u} & A_{2g} & A_{1u} \\ \hline A_{0u} & A_{0g} & 1 \end{array}$

20.17 $A_{2u} \times E_g$

 $\begin{array}{c|cccc}
A_{2u} & E_g & E_u \\
\hline
A_{2u} & \zeta_u & \zeta_u \\
\hline
\beta_u & \gamma_g & 1 & 0 \\
\beta_u & \zeta_g & 0 & 1
\end{array}$

 $20.18 \quad A_{2u} \times E_u$

 $\begin{array}{c|cccc}
A_{2u} & E_u & E_g \\
\hline
\beta_u & \gamma_u & 1 & 0 \\
\beta_u & \zeta_u & 0 & 1
\end{array}$

20.19 $A_{2g} \times A_{1g}$ $\begin{array}{c|c} A_{2g} & A_{1g} & \beta_g \\ \hline \beta_g & \alpha_g & 1 \end{array}$

20.20 $A_{2g} \times A_{1u}$

 $\begin{array}{c|cc} A_{2g} & A_{1u} & A_{2u} \\ \hline A_{g} & A_{u} & 1 \end{array}$

20.21 $A_{2g} \times A_{2u}$ $\begin{array}{c|cc}
A_{2g} & A_{2u} & A_{1u} \\
\hline
\beta_g & \beta_u & 1
\end{array}$

20.22 $A_{2g} \times A_{2g}$ $\begin{array}{c|c} A_{2g} & A_{2g} & A_{1g} \\ \hline \beta_g & \beta_g & 1 \end{array}$

20.23 $A_{2g} \times E_g$

20.24 $A_{2g} \times E_u$

 $\begin{array}{c|ccc} A_{2g} & E_u & E_u \\ A_{2g} & E_u & \gamma_u & \zeta_u \\ \hline \beta_g & \gamma_u & 0 & -1 \\ \beta_g & \zeta_u & 1 & 0 \\ \end{array}$

20.25 $E_g \times A_{1g}$

20.26 $E_g \times A_{1u}$

 $\begin{array}{c|cccc} E_g & A_{1u} & E_u \\ \hline P_g & \alpha_u & 0 & -1 \\ \hline Q_g & \alpha_u & 1 & 0 \\ \hline Q_g & \alpha_u & 1 & 0 \\ \hline \end{array}$

20.27 $E_g \times A_{2u}$

20.28 $E_g \times A_{2g}$

20.29 $E_g \times E_g$

20.30 $E_q \times E_u$

20.31 $E_u \times A_{1g}$

 $\begin{array}{c|cccc}
E_u & A_{1g} & E_u \\
\gamma_u & \zeta_u \\
\hline
\gamma_u & \alpha_g & 1 & 0 \\
\hline
\zeta_u & \alpha_g & 0 & 1
\end{array}$

20.32 $E_u \times A_{1u}$

 $\begin{array}{c|cccc}
E_u & A_{1u} & E_g \\
\gamma_g & \zeta_g \\
\hline
\gamma_u & \alpha_u & 0 & -1 \\
\hline
\zeta_u & \alpha_u & 1 & 0
\end{array}$

20.33 $E_u \times A_{2u}$

 $\begin{array}{c|cccc}
E_u & A_{2u} & E_g \\
\gamma_g & \zeta_g \\
\hline
\gamma_u & \beta_u & 1 & 0 \\
\hline
\zeta_u & \beta_u & 0 & 1
\end{array}$

20.34 $E_u \times A_{2g}$

 $\begin{array}{c|cccc}
E_u & A_{2g} & E_u \\
\hline
\gamma_u & \beta_g & 0 & -1 \\
\hline
\zeta_u & \beta_g & 1 & 0
\end{array}$

20.35 $E_u \times E_g$

20.36 $E_u \times E_u$

Group C_6

21.1 $A \times A$

21.2 *A* × *B*

 $\begin{array}{c|c}
A & B & \beta \\
\hline
\alpha & \beta & 1
\end{array}$

21.3 $A \times E^{'1}$

 $\begin{array}{c|c} A & E^{'1} & \eta \\ \hline \alpha & \eta & 1 \end{array}$

21.4 $A \times E^{'2}$

 $\begin{array}{c|c}
A & E'^2 & \mu \\
\hline
\alpha & \mu & 1
\end{array}$

21.5 $A \times E''^2$

21.6 $A \times E^{''1}$

21.7 $B \times A$ $\begin{array}{c|cc}
B & A & \beta \\
\hline
\beta & \alpha & 1
\end{array}$

21.8 *B* × *B*

 $\begin{array}{c|cc}
B & B & \alpha \\
\hline
\beta & \beta & 1
\end{array}$ **21.9** $B \times E'^1$

 $\begin{array}{c|cc}
B & E'^1 & \zeta''^2 \\
\hline
\beta & \eta & 1
\end{array}$

21.10 $B \times E^{'2}$

21.11 $B \times E^{"2}$

21.12 $B \times E''^1$

21.13 $E'^1 \times A$

21.14 $E'^1 \times B$

 $\begin{array}{c|c} & & E^{\prime\prime2} \\ \hline E^{\prime1} & B & \zeta \\ \hline \eta & \beta & 1 \end{array}$

21.15 $E'^1 \times E'^1$ $\begin{array}{c|cc} E^{'1} & E^{'1} & E^{''1} \\ \hline \eta & \eta & 1 \end{array}$

21.16 $E'^1 \times E'^2$

21.17 $E'^1 \times E''^2$ $\begin{array}{c|c} E^{'1} & E^{''2} & E^{'2} \\ \hline \eta & \zeta & 1 \end{array}$

21.18 $E'^1 \times E''^1$

21.19 $E'^2 \times A$

 $\begin{array}{c|cc} & & E^{'2} \\ E^{'2} & A & \mu \\ \hline \mu & \alpha & 1 \end{array}$

21.20 $E'^2 \times B$

21.21 $E^{'2} \times E^{'1}$

21.22 $E'^2 \times E'^2$

21.23 $E'^2 \times E''^2$

21.24 $E'^2 \times E''^1$

21.25 $E''^2 \times A$

21.26 $E''^2 \times B$

21.27 $E''^2 \times E'^1$

21.28 $E''^2 \times E'^2$

21.29 $E''^2 \times E''^2$

21.30 $E''^2 \times E''^1$

21.31 $E''^1 \times A$

21.32 $E''^1 \times B$

21.33 $E''^1 \times E'^1$

21.34 $E''^1 \times E'^2$

21.35 $E''^1 \times E''^2$

21.36 $E''^1 \times E''^1$

Group C_{3h}

22.1 $A^{'} \times A^{'}$

 $\mathbf{22.2} \quad A^{'} \times A^{''}$

 $\begin{array}{c|cc} A' & A'' & A'' \\ \hline \alpha & \beta & 1 \end{array}$

22.3 $A' \times E''^2$

 $\begin{array}{c|c} A' & E''^2 & \zeta''^2 \\ \hline \alpha & \zeta & 1 \end{array}$

22.4 $A' \times E''^1$

 $\begin{array}{c|c} A' & E^{''1} & \gamma \\ \hline \alpha & \gamma & 1 \end{array}$

$\textbf{22.5} A^{'} \times E^{'2}$	22.28 $E^{'2} \times E^{''1}$	$\textbf{23.15} \Gamma^2 \times \Gamma^3$	$oldsymbol{23.39} \Gamma^4 imes \Gamma^3$
$egin{array}{c c} A^{'} & E^{'2} & E^{'2} \\ \hline lpha & \mu & 1 \end{array}$	$egin{array}{c ccc} E^{'2} & E^{''1} & E^{''2} \ \hline \mu & \gamma & 1 \end{array}$	$egin{array}{c c c} \Gamma^2 & \Gamma^3 & \Gamma^{11} \\ \hline \gamma_5 & \gamma_6 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^4 & \Gamma^3 & \Gamma^1 \ \hline \gamma_7 & \gamma_6 & 1 \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{\mu \gamma 1}{\mu \gamma 1}$	γ_5 γ_6 1	$\gamma_7 \gamma_6 \mid 1$
22.6 $A' \times E'^{1}$	22.29 $E^{'2} \times E^{'2}$	$23.16 \Gamma^2 \times \Gamma^4$	$23.40 \Gamma^4 \times \Gamma^4$
$egin{array}{c c} A^{'} & E^{'1} & E^{'1} \\ \hline lpha & \eta & 1 \end{array}$	$egin{array}{c ccc} E^{'2} & E^{'2} & \pi \ \hline \mu & \mu & 1 \ \end{array}$	$\begin{array}{c cccc} \Gamma^2 & \Gamma^4 & \Gamma^{12} \\ \hline \gamma_5 & \gamma_7 & 1 \end{array}$	$egin{array}{c c} \Gamma^4 & \Gamma^4 & \Gamma^{11} \\ \hline \gamma_7 & \gamma_7 & 1 \\ \hline \end{array}$
$\alpha \eta \mid 1$	$egin{array}{c cccc} \hline \mu & \mu & 1 \end{array}$		
$22.7 A^{''} \times A^{'}$	22.30 $E'^2 \times E'^1$	23.17 $\Gamma^2 \times \Gamma^5$	$23.41 \Gamma^4 \times \Gamma^5$
$egin{array}{c c} A^{''} & A^{'} & A^{''} \ \hline eta & lpha & 1 \end{array}$	$egin{array}{c ccc} E^{'2} & E^{'1} & A^{'} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c c} \Gamma^2 & \Gamma^5 & \Gamma^8 \ \hline \gamma_{11} & \hline \gamma_5 & \gamma_8 & 1 \ \hline \end{array}$	$egin{array}{c c} \Gamma^4 & \Gamma^5 & \Gamma^9 \ \hline \gamma_{12} & \hline \gamma_7 & \gamma_8 & 1 \end{array}$
$\beta \alpha \mid 1$	$egin{array}{ c c c c c c c c c c c c c c c c c c c$		
$22.8 A^{''} \times A^{''}$	22.31 $E'^{1} \times A'$	23.18 $\Gamma^2 imes \Gamma^6$	$23.42 \Gamma^4 \times \Gamma^6$
$egin{array}{c cccc} A^{\prime\prime} & A^{\prime\prime} & \alpha \\ \hline eta & eta & 1 \\ \hline \end{array}$	$egin{array}{c c} E^{'1} & A^{'} & E^{'1} \ \hline \eta & lpha & 1 \end{array}$	$egin{array}{c c c} \Gamma^2 & \Gamma^6 & \Gamma^9 \ \hline \gamma_{12} \ \hline \gamma_5 & \gamma_9 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^4 & \Gamma^6 & \Gamma^{10} \ \hline \gamma_7 & \gamma_9 & 1 \end{array}$
β β 1		$oldsymbol{23.19} \Gamma^2 imes \Gamma^7$	$23.43 \Gamma^4 \times \Gamma^7$
22.9 $A^{''} \times E^{''2}$	22.32 $E'^1 \times A''$		
$A^{''}$ $E^{''2}$ $\left egin{array}{c} E^{'1} \\ \eta \end{array} \right $	$egin{array}{c c} E^{'1} & A^{''} & E^{''2} \ \hline \eta & eta & 1 \ \end{array}$	$egin{array}{c cccc} \Gamma^2 & \Gamma^7 & \Gamma^{10} \\ \hline \gamma_5 & \gamma_{10} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^4 & \Gamma^7 & \Gamma^8 \ \hline \gamma_{11} \ \hline \gamma_7 & \gamma_{10} & 1 \end{array}$
β ζ 1		$23.20 \Gamma^2 \times \Gamma^8$	$\textbf{23.44} \Gamma^4 \times \Gamma^8$
22.10 $A'' \times E''^1$	22.33 $E'^1 \times E''^2$	$egin{array}{c cccc} \Gamma^2 & \Gamma^8 & \Gamma^5 \ \hline \gamma_5 & \gamma_{11} & 1 \ \hline \end{array}$	$egin{array}{c c} \Gamma^4 & \Gamma^8 & \Gamma^6 \ \hline \gamma_7 & \gamma_{11} & 1 \ \hline \end{array}$
$egin{array}{c cccc} A^{\prime\prime} & E^{\prime\prime1} & E^{\prime2} \\ \hline eta & \gamma & 1 \end{array}$	$rac{E^{'1} E^{''2} \left egin{array}{c} E^{''1} \\ \gamma \end{array} ight \qquad \qquad$	$\gamma_5 \gamma_{11} \mid 1$	$\gamma_7 \gamma_{11} \mid 1$
		$23.21 \Gamma^2 \times \Gamma^9$	$\textbf{23.45} \Gamma^4 \times \Gamma^9$
22.11 $A'' \times E'^2$	22.34 $E'^1 \times E''^1$	$egin{array}{c cccc} \Gamma^2 & \Gamma^9 & \Gamma^6 \ \hline \gamma_5 & \gamma_{12} & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^4 & \Gamma^9 & \Gamma^7 \ \hline \gamma_{10} \ \hline \gamma_7 & \gamma_{12} & 1 \end{array}$
$egin{array}{c cccc} A^{\prime\prime} & E^{\prime 2} & E^{\prime\prime 1} \\ \hline eta & \mu & 1 \end{array}$	$egin{array}{c ccc} E^{'1} & E^{''1} & A^{''} \ \hline \eta & \gamma & 1 \end{array}$		
	$egin{array}{cccccccccccccccccccccccccccccccccccc$	23.22 $\Gamma^2 \times \Gamma^{10}$	23.46 $\Gamma^4 \times \Gamma^{10}$
22.12 $A'' \times E'^{1}$		$egin{array}{c cccc} \Gamma^2 & \Gamma^{10} & \Gamma^7 \ \gamma_{10} \ \hline \gamma_5 & \gamma_1 & 1 \ \end{array}$	$egin{array}{c c} \Gamma^4 & \Gamma^{10} & \Gamma^5 \ \gamma_8 \ \hline \gamma_7 & \gamma_1 & 1 \ \end{array}$
$egin{array}{c cccc} A^{\prime\prime} & E^{\prime1} & E^{\prime\prime2} \\ \hline eta & \eta & 1 \end{array}$	$egin{array}{c cccc} E^{'1} & E^{'2} & A^{'} & & & & & & & & & & & & & & & & & & &$	γ_5 γ_1 1 23.23 $\Gamma^2 imes \Gamma^{11}$	
22.13 $E''^2 \times A'$	22.36 $E'^1 \times E'^1$		23.47 $\Gamma^4 imes \Gamma^{11}$
		$egin{array}{c cccc} \Gamma^2 & \Gamma^{11} & \Gamma^3 & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} \Gamma^4 & \Gamma^{11} & \Gamma^2 \\ \hline \gamma_7 & \gamma_2 & 1 \end{array}$
$egin{array}{c cccc} E^{''2} & A^{'} & \xi^{''2} \ \hline \zeta & lpha & 1 \end{array}$	$egin{array}{c ccc} E^{'1} & E^{'1} & E^{'2} \\ \hline \eta & \eta & 1 \end{array}$	$oldsymbol{23.24} \Gamma^2 imes \Gamma^{12}$	$oldsymbol{23.48} \Gamma^4 imes \Gamma^{12}$
22.14 $E''^2 \times A''$	23 Group C_{6h}		
		$egin{array}{c c c} \Gamma^2 & \Gamma^{12} & \Gamma^4 \ \hline \gamma_5 & \gamma_3 & 1 \ \hline \end{array}$	$\begin{array}{c cccc} \Gamma^4 & \Gamma^{12} & \Gamma^3 \\ \hline \gamma_7 & \gamma_3 & 1 \end{array}$
$egin{array}{c cccc} E^{''2} & A^{''} & \pi \\ \hline \zeta & eta & 1 \end{array}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\textbf{23.25} \Gamma^3 \times \Gamma^1$	$\textbf{23.49} \Gamma^5 \times \Gamma^1$
22.15 $E''^2 \times E''^2$	$egin{array}{c cccc} \Gamma^1 & \Gamma^1 & \Gamma^1 \\ \hline \gamma_4 & \gamma_4 & 1 \end{array}$	$egin{array}{c c c} \Gamma^3 & \Gamma^1 & \Gamma^3 \ \hline \gamma_6 & \gamma_4 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^5 & \Gamma^1 & \Gamma^5 \ \hline \gamma_8 & \gamma_4 & 1 \ \hline \end{array}$
$\begin{array}{c cc} E^{''2} & E^{''2} & E^{''2} \\ \hline \zeta & \zeta & 1 \end{array}$	$23.2 \Gamma^1 \times \Gamma^2$		
	$egin{array}{c ccc} \Gamma^1 & \Gamma^2 & \Gamma^2 \ \hline \gamma_4 & \gamma_5 & 1 \ \hline \end{array}$	23.26 $\Gamma^3 imes \Gamma^2$	$egin{array}{cccc} {f 23.50} & \Gamma^5 imes \Gamma^2 \ & \Gamma^8 \end{array}$
22.16 $E''^2 \times E''^1$	$\frac{\gamma_4}{\gamma_4}$ $\gamma_5 \mid 1$	$\begin{array}{c cccc} \Gamma^3 & \Gamma^2 & \Gamma^{11} \\ \hline \gamma_6 & \gamma_5 & 1 \end{array}$	$egin{array}{c c} \Gamma^5 & \Gamma^2 & \Gamma^8 \ \hline \gamma_{8} & \gamma_{5} & 1 \ \hline \end{array}$
$egin{array}{c cccc} E^{\prime\prime2} & E^{\prime\prime1} & A^\prime & & & & & & & \\ \hline \zeta & \gamma & & 1 & & & & & & & \end{array}$	23.3 $\Gamma^1 imes \Gamma^3$	$\textbf{23.27} \Gamma^3 \times \Gamma^3$	$oldsymbol{23.51} \Gamma^5 imes \Gamma^3$
	$egin{array}{c c c} \Gamma^1 & \Gamma^3 & \Gamma^3 \\ \hline \gamma_4 & \gamma_6 & 1 \end{array}$		
22.17 $E''^2 \times E'^2$		$\begin{array}{c cccc} \Gamma^3 & \Gamma^3 & \Gamma^{12} \\ \hline \gamma_6 & \gamma_6 & 1 \end{array}$	$egin{array}{c c c} \Gamma^5 & \Gamma^3 & \Gamma^{10} \ \hline \gamma_8 & \gamma_6 & 1 \end{array}$
$egin{array}{c cccc} E^{''2} & E^{'2} & A^{''} & eta & $	23.4 $\Gamma^1 imes \Gamma^4$	$egin{array}{ccc} {f 23.28} & \Gamma^3 imes \Gamma^4 \end{array}$	$\textbf{23.52} \Gamma^5 \times \Gamma^4$
22.18 $E''^2 \times E'^1$	$egin{array}{c cccc} \Gamma^1 & \Gamma^4 & \Gamma^4 & \gamma_7 \ \hline \gamma_4 & \gamma_7 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^3 & \Gamma^4 & \Gamma^1 \ \hline \gamma_6 & \gamma_7 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^5 & \Gamma^4 & \Gamma^9 \ \hline \gamma_{12} \ \hline \gamma_8 & \gamma_7 & 1 \end{array}$
	$\textbf{23.5} \Gamma^1 \times \Gamma^5$		
$egin{array}{c cccc} E^{\prime\prime2} & E^{\prime1} & E^{\prime\prime1} \ \hline \zeta & \eta & 1 \end{array}$		23.29 $\Gamma^3 imes \Gamma^5$	$egin{array}{cccc} {f 23.53} & \Gamma^5 imes \Gamma^5 \ & \Gamma^1 \end{array}$
22.19 $E''^1 \times A'$	$egin{array}{c cccc} \Gamma^1 & \Gamma^5 & \Gamma^5 \ \hline \gamma_4 & \gamma_8 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^3 & \Gamma^5 & \Gamma^{10} \\ \hline \gamma_6 & \gamma_8 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^5 & \Gamma^5 & \Gamma^1 \ \gamma_4 \ \hline \gamma_8 & \gamma_8 & 1 \ \end{array}$
	23.6 $\Gamma^1 imes \Gamma^6$	$23.30 \Gamma^3 \times \Gamma^6$	$oldsymbol{23.54} \Gamma^5 imes \Gamma^6$
$egin{array}{c cccc} E^{''1} & A^{'} & E^{''1} \\ \hline \gamma & lpha & 1 \end{array}$	$egin{array}{c c} \Gamma^1 & \Gamma^6 & \Gamma^6 \ \hline \gamma_9 & \gamma_9 & 1 \ \hline \end{array}$		
22.20 $E''^1 \times A''$		$egin{array}{c c c} \Gamma^3 & \Gamma^6 & \Gamma^8 \ \hline \gamma_{11} \ \hline \gamma_6 & \gamma_9 & 1 \ \hline \end{array}$	$egin{array}{c c c} \Gamma^5 & \Gamma^6 & \Gamma^{12} \ \hline \gamma_8 & \gamma_9 & 1 \ \hline \end{array}$
$egin{array}{c ccc} E^{''1} & A^{''} & E^{'2} \\ \hline \gamma & eta & 1 \end{array}$	$23.7 \Gamma^1 \times \Gamma^7$	$23.31 \Gamma^3 \times \Gamma^7$	$oldsymbol{23.55} \Gamma^5 imes \Gamma^7$
	$egin{array}{c ccc} \Gamma^1 & \Gamma^7 & \Gamma^7 \\hline \gamma_4 & \gamma_{10} & 1 \end{array}$	$egin{array}{c c c} \Gamma^3 & \Gamma^7 & \Gamma^9 \ \hline \gamma_{12} \ \hline \gamma_6 & \gamma_{10} & 1 \ \hline \end{array}$	$\begin{array}{c cccc} \Gamma^5 & \Gamma^7 & \Gamma^{11} \\ \hline \gamma_8 & \gamma_{10} & 1 \end{array}$
22.21 $E''^1 \times E''^2$	γ_4 γ_{10} Γ^1 γ_{10} $\Gamma^1 \times \Gamma^8$		
$\begin{array}{c cccc} E^{\prime\prime 1} & E^{\prime\prime 2} & A^{\prime} \\ \hline \gamma & \zeta & 1 \end{array}$		23.32 $\Gamma^3 \times \Gamma^8$	$23.56 \Gamma^5 \times \Gamma^8$
	$egin{array}{c cccc} \Gamma^1 & \Gamma^8 & \Gamma^8 \ \hline \gamma_{11} & \hline \gamma_{4} & \gamma_{11} & 1 \end{array}$	$egin{array}{c c c} \Gamma^3 & \Gamma^8 & \Gamma^7 \\ \hline \gamma_{6} & \gamma_{11} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^5 & \Gamma^8 & \Gamma^2 \\ \hline \gamma_8 & \gamma_{11} & 1 \\ \hline \end{array}$
22.22 $E''^1 \times E''^1$	$23.9 \Gamma^1 \times \Gamma^9$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$
$egin{array}{c cccc} E^{\prime\prime 1} & E^{\prime\prime 1} & E^{\prime\prime 1} & \eta & & & & & & & & & & & & & & & & & $			
	$egin{array}{c cccc} \Gamma^1 & \Gamma^9 & \Gamma^9 \ \hline \gamma_{12} & \hline \gamma_4 & \gamma_{12} & 1 \end{array}$	$egin{array}{c cccc} \Gamma^3 & \Gamma^9 & \Gamma^5 \ \hline \gamma_8 & \gamma_{12} & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^5 & \Gamma^9 & \Gamma^4 \ \hline \gamma_8 & \gamma_{12} & 1 \ \hline \end{array}$
22.23 $E''^1 \times E'^2$	$23.10 \Gamma^1 \times \Gamma^{10}$	$oldsymbol{23.34} \Gamma^3 imes \Gamma^{10}$	${f 23.58} \Gamma^5 imes \Gamma^{10}$
$\begin{array}{c cccc} E^{''1} & E^{'2} & E^{''2} \\ \hline \gamma & \mu & 1 \end{array}$	$egin{array}{c ccc} \Gamma^1 & \Gamma^{10} & \Gamma^{10} \ \hline \gamma_1 & \gamma_1 & 1 \ \hline \gamma_4 & \gamma_1 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^3 & \Gamma^{10} & \Gamma^6 \\ \hline \gamma_6 & \gamma_1 & 1 \\ \hline \end{array}$	$egin{array}{c ccc} \Gamma^5 & \Gamma^{10} & \Gamma^3 \ \hline \gamma_8 & \gamma_1 & 1 \ \hline \end{array}$
22.24 $E''^1 \times E'^1$			
	$23.11 \Gamma^1 \times \Gamma^{11}$	$23.35 \Gamma^3 \times \Gamma^{11}$	$23.59 \Gamma^5 \times \Gamma^{11}$
$\begin{array}{c cccc} E^{\prime\prime 1} & E^{\prime 1} & A^{\prime\prime} \\ \hline \gamma & \eta & 1 \end{array}$	$egin{array}{c cccc} \Gamma^1 & \Gamma^{11} & \Gamma^{11} \\ \hline \gamma_4 & \gamma_2 & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^3 & \Gamma^{11} & \Gamma^4 \\ \hline \gamma_6 & \gamma_2 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^5 & \Gamma^{11} & \Gamma^7 \ \hline \gamma_{8} & \gamma_2 & 1 \end{array}$
22.25 $E^{'2} \times A^{'}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$		
		$egin{array}{cccc} oldsymbol{23.36} & \Gamma^3 imes \Gamma^{12} \ & & \Gamma^2 \end{array}$	$egin{array}{cccc} {f 23.60} & \Gamma^5 imes \Gamma^{12} \ & & & & & & & & & & & & & & & & & & $
$egin{array}{c ccc} E^{'2} & A^{'} & E^{'2} \\ \hline \mu & lpha & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^1 & \Gamma^{12} & \Gamma^{12} \\ \hline \gamma_4 & \gamma_3 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^3 & \Gamma^{12} & \Gamma^2 & & & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} \Gamma^5 & \Gamma^{12} & \Gamma^6 \ \hline \gamma_8 & \gamma_3 & 1 \ \hline \end{array}$
22.26 $E'^2 \times A''$	$oldsymbol{23.13} \Gamma^2 imes \Gamma^1$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\textbf{23.61} \Gamma^6 \times \Gamma^1$
$\begin{array}{c cc} E^{'2} & A^{\prime\prime} & E^{\prime\prime 1} \\ \hline \mu & \beta & 1 \end{array}$			
	$egin{array}{c c c} \Gamma^2 & \Gamma^1 & \Gamma^2 \ \hline \gamma_5 & \gamma_4 & 1 \end{array}$	$egin{array}{c c c} \Gamma^4 & \Gamma^1 & \Gamma^4 \ \hline \gamma_7 & \gamma_4 & 1 \ \hline \end{array}$	$egin{array}{c ccc} \Gamma^6 & \Gamma^1 & \Gamma^6 \ \hline \gamma_9 & \gamma_4 & 1 \ \hline \end{array}$
22.27 $E'^2 \times E''^2$	$\textbf{23.14} \Gamma^2 \times \Gamma^2$	$\textbf{23.38} \Gamma^4 \times \Gamma^2$	$23.62 \Gamma^6 \times \Gamma^2$
$egin{array}{c cccc} E^{'2} & E^{''2} & A^{''} \ \hline \mu & \zeta & 1 \end{array}$	$egin{array}{c cccc} \Gamma^2 & \Gamma^1 & \Gamma^1 \ \hline \gamma_5 & \gamma_5 & 1 \end{array}$	$\begin{array}{c c} \Gamma^4 & \Gamma^2 & \Gamma^{12} \\ \hline \gamma_7 & \gamma_5 & 1 \end{array}$	$egin{array}{c c} \Gamma^6 & \Gamma^2 & \Gamma^9 \ \hline \gamma_{12} & \hline \gamma_9 & \gamma_5 & 1 \ \hline \end{array}$
μ ζ 1	γ_5 γ_5 1	$\gamma_7 \gamma_5 \mid 1$	$\gamma_9 \gamma_5 \mid 1$
	0		

23.63 $\Gamma^6 imes \Gamma^3$	$\textbf{23.87} \Gamma^8 \times \Gamma^3$	$\textbf{23.111} \Gamma^{10} \times \Gamma^3$	$\textbf{23.135} \Gamma^{12} \times \Gamma^3$
$ \begin{array}{c cc} \Gamma^6 & \Gamma^3 & \Gamma^8 \\ \hline \gamma_9 & \gamma_6 & 1 \end{array} $	$egin{array}{c cccc} \Gamma^8 & \Gamma^3 & \Gamma^7 \ \hline \gamma_{11} & \gamma_6 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^3 & \Gamma^6 \ \hline \gamma_1 & \gamma_6 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^3 & \Gamma^2 \ \hline \gamma_3 & \gamma_6 & 1 \end{array}$
γ_9 γ_6 1 $oxed{23.64}$ $\Gamma^6 imes\Gamma^4$	γ_{11} γ_{6} 1 $oxed{23.88}$ $\Gamma^{8} imes\Gamma^{4}$	γ_1 $\gamma_6 \mid 1$ $egin{array}{c c} egin{array}{c c} \egin{array}{c c} egin{array}{c c} \egin{array}{c c} \egin{array}$	$egin{array}{cccc} \gamma_3 & \gamma_6 & 1 \ & & & & & & & & & & & & & & & & &$
$ \begin{array}{c cccc} \Gamma^6 & \Gamma^4 & \Gamma^{10} \\ \hline \gamma_9 & \gamma_7 & 1 \end{array} $	$egin{array}{c cccc} \Gamma^8 & \Gamma^4 & \Gamma^6 & & & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^4 & \Gamma^5 \ \hline \gamma_1 & \gamma_7 & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^{12} & \Gamma^4 & \Gamma^3 \\ \hline \gamma_3 & \gamma_7 & 1 \end{array}$
$oxed{\gamma_9 \gamma_7 \mid \ 1}$ 23.65 $\Gamma^6 imes \Gamma^5$	$oxed{\gamma_{11} \gamma_7 \mid 1}$ 23.89 $\Gamma^8 imes \Gamma^5$	$oxed{\gamma_1 \gamma_7 \mid 1}$ 23.113 $\Gamma^{10} imes \Gamma^5$	$egin{array}{c cccc} \hline \gamma_3 & \gamma_7 & 1 \\ \hline egin{array}{c cccc} 23.137 & \Gamma^{12} imes \Gamma^5 \end{array}$
	$egin{array}{c cccc} 23.89 & \Gamma^5 imes \Gamma^5 \ \hline \Gamma^8 & \Gamma^5 & \gamma_5 \ \hline \gamma_{11} & \gamma_8 & \Gamma \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$ \begin{array}{c ccccc} \Gamma^6 & \Gamma^5 & \Gamma^{12} \\ \hline \gamma_9 & \gamma_8 & 1 \end{array} $			
23.66 $\Gamma^6 \times \Gamma^6$	23.90 $\Gamma^8 imes \Gamma^6$	23.114 $\Gamma^{10} imes \Gamma^6$	23.138 $\Gamma^{12} \times \Gamma^{6}$
$ \begin{array}{c cccc} \Gamma^6 & \Gamma^6 & \gamma_2 \\ \hline \gamma_9 & \gamma_9 & 1 \end{array} $	$egin{array}{c cccc} \Gamma^8 & \Gamma^6 & \Gamma^4 \ \hline \gamma_{11} & \gamma_9 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^6 & \Gamma^2 \ \hline \gamma_1 & \gamma_9 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^6 & \Gamma^7 \\ \hline \gamma_3 & \gamma_9 & 1 \end{array}$
23.67 $\Gamma^6 imes \Gamma^7$	$23.91 \Gamma^8 \times \Gamma^7$ $\mid \Gamma^3$	$egin{array}{cccc} oldsymbol{23.115} & \Gamma^{10} imes \Gamma^7 \ & & & & & & & & & & & & & & & & & & $	$egin{array}{cccc} {f 23.139} & \Gamma^{12} imes \Gamma^7 \ & & & & & & & & & & & & & & & & & & $
$\begin{array}{c c} \Gamma^6 & \Gamma^7 & \Gamma^1 \\ \hline \gamma_9 & \gamma_{10} & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^8 & \Gamma^7 & \Gamma^3 \\ \hline \gamma_{11} & \gamma_{10} & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^7 & \Gamma^4 \ \hline \gamma_1 & \gamma_{10} & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^{12} & \Gamma^7 & \Gamma^5 \\ \hline \gamma_3 & \gamma_{10} & 1 \end{array}$
23.68 $\Gamma^6 imes \Gamma^8$	23.92 $\Gamma^8 imes \Gamma^8$	23.116 $\Gamma^{10} \times \Gamma^8$	$23.140 \Gamma^{12} \times \Gamma^{8}$
$egin{array}{c cccc} \Gamma^6 & \Gamma^8 & \Gamma^4 \\ \hline \gamma_9 & \gamma_{11} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^8 & \Gamma^1 \\ \hline \gamma_{11} & \gamma_{11} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^8 & \Gamma^{11} \\ \hline \gamma_1 & \gamma_{11} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^8 & \Gamma^9 \ \hline \gamma_{12} \ \hline \gamma_3 & \gamma_{11} & 1 \ \hline \end{array}$
23.69 $\Gamma^6 \times \Gamma^9$	23.93 $\Gamma^8 \times \Gamma^9$	$\textbf{23.117} \Gamma^{10} \times \Gamma^{9}$	$23.141 \Gamma^{12} \times \Gamma^{9}$
$\begin{array}{c cccc} \Gamma^6 & \Gamma^9 & \Gamma^3 \\ \hline \gamma_9 & \gamma_{12} & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^9 & \Gamma^{12} \\ \hline \gamma_{11} & \gamma_{12} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^9 & \Gamma^1 \ \hline \gamma_1 & \gamma_{12} & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^9 & \Gamma^{10} \\ \hline \gamma_3 & \gamma_{12} & 1 \end{array}$
23.70 $\Gamma^6 imes \Gamma^{10}$	$23.94 \Gamma^8 \times \Gamma^{10}$	$\textbf{23.118} \Gamma^{10} \times \Gamma^{10}$	23.142 $\Gamma^{12} \times \Gamma^{10}$
$\begin{array}{c cccc} \Gamma^6 & \Gamma^{10} & \Gamma^2 \\ \hline \gamma_9 & \gamma_1 & 1 \end{array}$	$egin{array}{c ccc} \Gamma^8 & \Gamma^{10} & \Gamma^{11} \ \hline \gamma_2 & & & \ \hline \gamma_{11} & \gamma_1 & 1 & & \ \end{array}$	$egin{array}{c cccc} \Gamma^{10} & \Gamma^{12} & \Gamma^{12} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^{10} & \Gamma^8 \ \hline \gamma_1 & \gamma_1 & 1 \ \hline \gamma_3 & \gamma_1 & 1 \ \hline \end{array}$
23.71 $\Gamma^6 imes \Gamma^{11}$	23.95 $\Gamma^8 \times \Gamma^{11}$	$\textbf{23.119} \Gamma^{10} \times \Gamma^{11}$	$\textbf{23.143} \Gamma^{12} \times \Gamma^{11}$
$\begin{array}{c cccc} \Gamma^6 & \Gamma^{11} & \Gamma^5 \\ \hline \gamma_9 & \gamma_2 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^{11} & \Gamma^{10} \ \hline \gamma_{11} & \gamma_{2} & 1 \end{array}$	$\begin{array}{c cc} \Gamma^{10} & \Gamma^{11} & \Gamma^9 \\ \hline \gamma_1 & \gamma_2 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^{11} & \Gamma^1 \\ \hline \gamma_3 & \gamma_2 & 1 \end{array}$
γ_9 γ_2 1 γ_2 1 γ_2 γ_3 γ_4 γ_5 γ_6 γ_6 γ_6 γ_6 γ_6 γ_6 γ_6	γ_{11} γ_{2} 1 $oxed{23.96}$ $\Gamma^{8} imes\Gamma^{12}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$23.144 \Gamma^{12} \times \Gamma^{12}$
$\begin{array}{c cccc} \Gamma^6 & \Gamma^{12} & \Gamma^7 \\ \hline \gamma_9 & \gamma_3 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^8 & \Gamma^{12} & \Gamma^9 \ \hline \gamma_{11} & \gamma_3 & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^{10} & \Gamma^{12} & \Gamma^8 \\ \hline \gamma_1 & \gamma_3 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{12} & \Gamma^{12} & \Gamma^{11} \\ \hline \gamma_3 & \gamma_3 & 1 \end{array}$
γ_9 γ_3 1 $oxed{23.73}$ $\Gamma^7 imes \Gamma^1$	$egin{array}{c cccc} \gamma_{11} & \gamma_3 & 1 \ & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} \gamma_1 & \gamma_3 & 1 \ & & & & & & & & & & & & & & & & &$	
$\begin{array}{c cccc} \Gamma^7 & \Gamma^1 & \Gamma^7 \\ \hline \gamma_{10} & \gamma_4 & 1 \end{array}$	$egin{array}{c ccc} \Gamma^9 & \Gamma^1 & \Gamma^9 \ \hline \gamma_{12} & \gamma_4 & 1 \ \hline \end{array}$	$\begin{array}{c cccc} \Gamma^{11} & \Gamma^1 & \Gamma^{11} \\ \hline \gamma_2 & \gamma_4 & 1 \end{array}$	24 Group D_6
$egin{array}{c cccc} \overline{\gamma_{10}} & \gamma_4 & 1 \end{array}$ $egin{array}{cccc} 23.74 & \Gamma^7 imes \Gamma^2 \end{array}$	$oxed{\gamma_{12}} egin{array}{c c} \gamma_4 & 1 \end{array}$ $oxed{23.98} egin{array}{c c} \Gamma^9 imes \Gamma^2 \end{array}$	$egin{array}{c c c} \hline \gamma_2 & \gamma_4 & 1 \\ \hline egin{array}{c c c} 23.122 & \Gamma^{11} imes \Gamma^2 \end{array}$	$egin{array}{c c} A_1 & A_1 & A_1 \ \hline lpha & lpha & 1 \ \hline \end{array}$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c cccc} \Gamma^9 & \Gamma^2 & \Gamma^6 \\ \hline \gamma_{12} & \gamma_5 & 1 \end{array}$	$egin{array}{c cccc} egin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
			$ \begin{array}{c c} A_1 & B_1 & \gamma \\ \hline \alpha & \gamma & 1 \end{array} $
23.75 $\Gamma^7 imes \Gamma^3$ $\Gamma^7 imes \Gamma^3 imes \Gamma^9 imes \Gamma^$	$23.99 \Gamma^9 \times \Gamma^3$ $\Gamma^9 \Gamma^3 \mid_{\gamma_9}^{\Gamma^5}$	23.123 $\Gamma^{11} imes \Gamma^3$ $\Gamma^{11} \Gamma^{3} \mid_{\gamma_{7}}^{\Gamma^{4}}$	$ \begin{array}{c c} \hline \alpha & \gamma & 1 \end{array} $ 24.3 $A_1 \times B_2$
$ \begin{array}{c ccccc} \Gamma^7 & \Gamma^3 & \Gamma^9 \\ \hline \gamma_{10} & \gamma_6 & 1 \end{array} $	$egin{array}{c cccc} \Gamma^9 & \Gamma^3 & \Gamma^5 \\ \hline \gamma_{12} & \gamma_6 & 1 \\ \hline \end{array}$	$ \begin{array}{c cc} \Gamma^{11} & \Gamma^3 & \Gamma^4 \\ \hline \gamma_2 & \gamma_6 & 1 \end{array} $	$\begin{array}{c cccc} 24.3 & A_1 \times B_2 \\ \hline A_1 & B_2 & \zeta \\ \hline \alpha & \zeta & 1 \end{array}$
23.76 $\Gamma^7 imes \Gamma^4$	$23.100 \Gamma^9 \times \Gamma^4$	23.124 $\Gamma^{11} imes \Gamma^4$	
$ \begin{array}{c cccc} \Gamma^7 & \Gamma^4 & \Gamma^8 \\ \hline \gamma_{10} & \gamma_7 & 1 \end{array} $	$egin{array}{c c} \Gamma^9 & \Gamma^4 & \Gamma^7 \ \gamma_{10} \ \hline \gamma_{12} & \gamma_7 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{11} & \Gamma^4 & \Gamma^2 \\ \hline \gamma_2 & \gamma_7 & 1 \end{array}$	$24.4 A_1 \times A_2$
23.77 $\Gamma^7 imes \Gamma^5$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	23.125 $\Gamma^{11} imes \Gamma^5$	$\begin{array}{c cc} A_1 & A_2 & A_2 \\ \hline \alpha & \beta & 1 \end{array}$
$\begin{array}{c cccc} \Gamma^7 & \Gamma^5 & \Gamma^{11} \\ \hline \gamma_{10} & \gamma_8 & 1 \end{array}$	$egin{array}{c c} \Gamma^9 & \Gamma^5 & \Gamma^4 \ \hline \gamma_{12} & \gamma_8 & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{11} & \Gamma^5 & \Gamma^7 \\ \hline \gamma_2 & \gamma_8 & 1 \end{array}$	$24.5 A_1 \times E_2$
23.78 $\Gamma^7 imes \Gamma^6$	$egin{array}{cccc} oldsymbol{23.102} & \Gamma^9 imes \Gamma^6 \ & & & & & & & & & & & & & & & & & & $	$egin{array}{cccc} {f 23.126} & \Gamma^{11} imes \Gamma^6 \ & \Gamma^5 \end{array}$	$\begin{array}{c cccc} A_1 & E_2 & E_2 \\ \hline \alpha & \nu & 1 & 0 \\ \alpha & \xi & 0 & 1 \end{array}$
$egin{array}{c c} \Gamma^7 & \Gamma^6 & \Gamma^1 \ \hline \gamma_{10} & \gamma_9 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^9 & \Gamma^6 & \Gamma^3 \ \hline \gamma_{12} & \gamma_9 & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{11} & \Gamma^6 & \Gamma^5 \ \hline \gamma_2 & \gamma_9 & 1 \end{array}$	24.6 $A_1 \times E_1$
$\textbf{23.79} \Gamma^7 \times \Gamma^7$	$\textbf{23.103} \Gamma^9 \times \Gamma^7$	$oldsymbol{23.127} \Gamma^{11} imes \Gamma^7$	$egin{array}{c cccc} A_1 & E_1 & E_1 & & & & & & & & & & & & & & & & & & &$
$ \begin{array}{c cccc} \Gamma^7 & \Gamma^7 & \Gamma^{12} \\ \hline \gamma_{10} & \gamma_{10} & 1 \end{array} $	$egin{array}{c ccc} \Gamma^9 & \Gamma^7 & \Gamma^2 \ \hline \gamma_{12} & \gamma_{10} & 1 \end{array}$	$egin{array}{c cccc} \Gamma^{11} & \Gamma^7 & \Gamma^6 \\ \hline \gamma_2 & \gamma_{10} & 1 \end{array}$	$egin{array}{c ccc} lpha & \mu & 0 & 1 \\ 24.7 & B_1 imes A_1 \end{array}$
23.80 $\Gamma^7 \times \Gamma^8$	$23.104 \Gamma^9 \times \Gamma^8$	23.128 $\Gamma^{11} \times \Gamma^{8}$	$ \begin{array}{c c} B_1 & A_1 & \gamma \\ \hline & \gamma & \alpha & 1 \end{array} $
$ \begin{array}{c cccc} \Gamma^7 & \Gamma^8 & \Gamma^3 \\ \hline \gamma_{10} & \gamma_{11} & 1 \end{array} $	$egin{array}{c cccc} \Gamma^9 & \Gamma^8 & \Gamma^{12} \\ \hline \gamma_{12} & \gamma_{11} & 1 \\ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{11} & \Gamma^8 & \Gamma^{10} \\ \hline \gamma_2 & \gamma_{11} & 1 \\ \hline \end{array}$	
$\textbf{23.81} \Gamma^7 \times \Gamma^9$	$\textbf{23.105} \Gamma^9 \times \Gamma^9$	$\textbf{23.129} \Gamma^{11} \times \Gamma^{9}$	$ \begin{array}{c cc} 24.8 & B_1 \times B_1 \\ \underline{B_1 & B_1 & \alpha \\ \hline \gamma & \gamma & 1 \end{array} $
$egin{array}{c cccc} \Gamma^7 & \Gamma^9 & \Gamma^2 \ \hline \gamma_{10} & \gamma_{12} & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^9 & \Gamma^9 & \Gamma^{11} \ \hline \gamma_{12} & \gamma_{12} & 1 \ \hline \end{array}$	$egin{array}{c cccc} \Gamma^{11} & \Gamma^9 & \Gamma^8 \\ \hline \gamma_1 & \gamma_{12} & 1 \\ \hline \end{array}$	
23.82 $\Gamma^7 \times \Gamma^{10}$	$oldsymbol{23.106} \Gamma^9 imes \Gamma^{10}$	$23.130 \Gamma^{11} \times \Gamma^{10}$	24.9 $B_1 \times B_2$
$\begin{array}{c cccc} \Gamma^7 & \Gamma^{10} & \Gamma^4 \\ \hline \gamma_{10} & \gamma_1 & 1 \end{array}$	$egin{array}{c c} \Gamma^9 & \Gamma^{10} & \Gamma^1 \ \hline \gamma_{12} & \gamma_1 & 1 \end{array}$	$\begin{array}{c cccc} \Gamma^{11} & \Gamma^{10} & \Gamma^9 \\ \hline \gamma_{12} & \\ \hline \gamma_{2} & \gamma_{1} & 1 \end{array}$	$\begin{array}{c cc} B_1 & B_2 & \beta \\ \hline \gamma & \zeta & 1 \end{array}$
γ_{10} γ_1 γ_1 γ_1 γ_1 γ_1 γ_2 γ_3 γ_4 γ	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$24.10 B_1 \times A_2$
$\begin{array}{c c} \Gamma^7 & \Gamma^{11} & \Gamma^6 \\ \hline \gamma_{10} & \gamma_2 & 1 \end{array}$	$egin{array}{c ccc} \Gamma^9 & \Gamma^{11} & \Gamma^8 \ \hline \gamma_{12} & \gamma_2 & 1 \ \hline \end{array}$	$egin{array}{c ccc} \Gamma^{11} & \Gamma^{11} & \Gamma^{12} \ \hline \gamma_2 & \gamma_2 & 1 \end{array}$	$egin{array}{c c} B_1 & A_2 & B_2 \ \hline \gamma & eta & 1 \ \hline \end{array}$
γ_{10} γ_2 1 23.84 $\Gamma^7 \times \Gamma^{12}$	$egin{array}{c cccc} \gamma_{12} & \gamma_2 & 1 \ & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} \gamma_2 & \gamma_2 & 1 \end{array}$ $egin{array}{c cccc} 23.132 & \Gamma^{11} imes \Gamma^{12} \end{array}$	24.11 $B_1 \times E_2$ E_1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c cccc} \Gamma^9 & \Gamma^{12} & \gamma_1 \ \hline \gamma_{12} & \gamma_3 & 1 \ \hline \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c cccc} B_1 & E_2 & E_1 & & & & & & & & & & & & & & & & & & &$
$egin{array}{c c c c} \hline \gamma_{10} & \gamma_3 & 1 \\ \hline \end{array}$ 23.85 $\Gamma^8 imes \Gamma^1$	$oxed{\gamma_{12} \gamma_3 \mid \ 1}$ $oxed{23.109} \Gamma^{10} imes \Gamma^1$	$egin{array}{c c c} \hline \gamma_2 & \gamma_3 & 1 \\ \hline egin{array}{c c c} 23.133 & \Gamma^{12} imes \Gamma^1 \end{array}$	24.12 $B_1 \times E_1$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c cccc} B_1 & E_1 & E_2 \\ \hline \gamma & \eta & 1 & 0 \\ \gamma & \mu & 0 & -1 \end{array}$
			·
$egin{array}{c c} egin{array}{c c} egin{array}{c c} egin{array}{c c} egin{array}{c c} \Gamma^8 & \Gamma^2 & \Gamma^5 \ \hline \gamma_{11} & \gamma_5 & 1 \end{array} \end{array}$	$\begin{array}{c c} 23.110 & \Gamma^{10} \times \Gamma^2 \\ & \frac{\Gamma^{10} & \Gamma^2 & \gamma_{10}}{\gamma_1 & \gamma_5 & 1} \end{array}$	$\begin{array}{c c} 23.134 & \Gamma^{12} \times \Gamma^2 \\ & \frac{\Gamma^{12} & \Gamma^2 & \frac{\Gamma^4}{\gamma_7}}{\gamma_3 & \gamma_5 & 1} \end{array}$	$ \begin{array}{c cc} 24.13 & B_2 \times A_1 \\ \underline{B_2 & A_1 & \zeta \\ \hline \zeta & \alpha & 1 \end{array} $
γ_{11} γ_5 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		$\frac{\zeta}{\zeta} \alpha \mid 1$
	•••		

	24	.14	B_2	$\times B_1$	
		$\frac{B_2}{\zeta}$	B_1	$egin{aligned} A_2 \ eta \end{aligned}$	
		ζ	γ	1	
	24		_	$\times B_2$ A_1	
		$\frac{B_2}{\zeta}$	$\frac{B_2}{\zeta}$	$\frac{\alpha}{1}$	
	24	.16	B_2	$\times A_2$	
		$\frac{B_2}{\zeta}$	$A_2 \mid A_2 \mid$	B_1 γ	
		ζ	β	1	
				$\times E_2$	
	_	$\frac{B_2}{\zeta} \frac{E_5}{\nu}$	$\frac{1}{ 0}$	$\frac{\mu}{1}$	
			1		
		B_2 E		$\times E_1$	
	_	$\frac{B_2}{\zeta} \frac{E}{\eta}$	$\begin{array}{c c} 1 & \nu \\ \hline & 0 \\ 1 & 1 \end{array}$	$\frac{\xi}{1}$	
	24			$\times A_1$	
		$\frac{A_2}{\beta}$			
		β	α	1	
	24			$\times B_1$	
		$\frac{A_2}{\beta}$	$\frac{B_1}{\gamma}$	$\frac{\zeta}{1}$	
	24			$\times B_2$	
		$\frac{A_2}{\beta}$	B_2	B_1 γ	
		β	ζ	1	
	24			$\times A_2$	
		$\frac{A_2}{\beta}$	$\frac{A_2}{\beta}$	$\frac{\alpha}{\alpha}$	
	24	.23	A_2	$\times E_2$	
	1	$A_2 E_2$	$\begin{bmatrix} E_2 \\ \nu \end{bmatrix}$	ξ	
		$A_2 E_2$ $\beta \nu$ $\beta \xi$	0 1	-1 0	
	24	.24	A_2	$\times E_1$	
		$A_2 E_1$ $\beta \eta$ $\beta \mu$	$\begin{bmatrix} E_1 \\ \eta \end{bmatrix}$	μ	
		$eta \qquad \eta \ eta \qquad \mu$	$\begin{vmatrix} 0 \\ 1 \end{vmatrix}$	$-1 \\ 0$	
				$\times A_1$	
		E_2 A ν α ξ α	$\frac{E_2}{\nu}$	$\frac{\xi}{0}$	
	_	ξα	0	1	
				$\times B_1$	
	_1	$ \begin{array}{ccc} E_2 & B_1 \\ \nu & \gamma \\ \xi & \gamma \end{array} $	$\frac{\left \begin{array}{c} D_1 \\ \eta \end{array}\right }{\left \begin{array}{c} 1 \end{array}\right }$	$\frac{\mu}{0}$	
		ξ γ	0	-1	
				$\times B_2$	
	_	E_2 B_2 ν ζ ξ ζ	$\frac{1}{\eta}$	$\frac{\mu}{1}$	
	_	ξ ζ	1	0	
		.28	_	$\times A_2$	
		$\frac{\mathbb{E}_2}{\nu} \frac{A_2}{\beta}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\xi}{-1}$	
		ξ β	1	0	
				$\times E_2$	
$\frac{E_2}{\nu}$	E_2 ν	$ \begin{array}{ c c c } A_1 & \\ \alpha & \\ \hline & \frac{\sqrt{2}}{2} & \\ & 0 & \\ \end{array} $	β 0	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\xi}{\frac{\sqrt{2}}{2}}$
ξ	$\frac{\xi}{\nu}$	$\begin{array}{ c c c } \hline & 0 \\ \hline & 0 \\ \hline & \frac{\sqrt{2}}{2} \\ \hline \end{array}$	$\frac{-\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}$	$\frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}$	0
ξ				$ 0 \rangle$ $\times E_1$	$-\frac{\sqrt{2}}{2}$
7		$\begin{vmatrix} B_1 \\ \gamma \end{vmatrix}$	_	_	
ν	$\frac{E_1}{\eta}$	$ \begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix} $	$\begin{bmatrix} \zeta \\ 0 \\ \frac{\sqrt{2}}{2} \end{bmatrix}$	0 $-\frac{\sqrt{2}}{2}$	$ \frac{\mu}{-\frac{\sqrt{2}}{2}} $ 0
ν ξ ξ	$\frac{\mu}{\eta}$			$\begin{array}{c} \frac{2}{\sqrt{2}} \\ 0 \end{array}$	$0 \\ -\frac{\sqrt{2}}{2}$
•				$\times A_1$	2
		E_1 A_1		μ	
	_	$\eta \alpha$ $\mu \alpha$	1	0	
	24		•	$\times B_1$	
			_	_	
	_	E_1 B_1 η γ μ γ	1 0	0 -1	
				$\times B_2$	
	_	E_1 B_1 γ ζ μ ζ	0	1 0	
		, 5	1 *	~	

		24.	.34	E_1	$\times A_2$	
			$egin{array}{ccc} G_1 & A_1 \ D_1 & eta \end{array}$	$\begin{array}{c c} E_1 \\ \eta \\ \hline \end{array}$	$\begin{array}{c} \mu \\ \hline -1 \end{array}$	
		24.	,	E_1	0 $\times E_{2}$	
-	$\frac{E_1}{\eta}$			$ \begin{vmatrix} B_2 \\ \zeta \end{vmatrix} $ $ \frac{2}{2} \begin{vmatrix} 0 \\ \frac{\sqrt{2}}{2} \end{vmatrix} $		$\frac{\mu}{\frac{\sqrt{2}}{2}}$
-	η μ μ	<i>ξ ν ξ</i>	$\begin{array}{ c c }\hline 0\\\hline \\ \frac{\sqrt{2}}{2}\\\hline \end{array}$	$ \begin{array}{c c} \frac{\sqrt{2}}{2} \\ \hline 0 \end{array} $	$ \begin{array}{ c c } & -\frac{\sqrt{2}}{2} \\ \hline & \frac{\sqrt{2}}{2} \\ & 0 \end{array} $	$ \begin{array}{c} 0 \\ \hline 0 \\ \frac{\sqrt{2}}{2} \end{array} $
				E_1	_	
· -	E_1 η η	E_1 η μ		$ \begin{vmatrix} A_2 \\ \beta \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $		$\frac{\xi}{-\frac{\sqrt{2}}{2}}$
_	μ μ	$\eta \ \mu$	$\begin{array}{ c c }\hline 0\\ \frac{\sqrt{2}}{2}\\ \hline \end{array}$	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$	$\begin{array}{ c c }\hline \frac{\sqrt{2}}{2}\\0\end{array}$	$0 \\ \frac{\sqrt{2}}{2}$
2	5			A_1 :	_	C_{6v}
				$A_1 \mid A_2 \mid A_3 \mid A_4 \mid A_5 $		
				A_1		
			$\frac{A_1}{\alpha}$	$B_2 \mid B_2 \mid C$	$\frac{\beta_2}{\zeta}$	
				$A_1 \gtrsim A_1 \gtrsim A_2 \lesssim A_1 \lesssim A_2 $	_	
				$\frac{B_1}{\gamma}$		
				$A_2 \mid \beta \mid$	_	
			.5	A_1	$\times E_2$	
			$\frac{A_1}{\alpha}$ $\frac{B}{\alpha}$	$ \begin{array}{c c} E_2 & E_2 \\ \hline \nu & 1 \\ \xi & 0 \end{array} $	$\frac{\xi}{0}$	
				A_1	_	
			$\begin{array}{cccc} A_1 & B \\ \hline \alpha & \alpha \\ \hline \alpha & B \end{array}$	$ \begin{array}{c c} E_1 & E_1 \\ \eta & 0 \end{array} $	$\frac{\mu}{0}$	
				B_2	_	
				$A_1 \mid B_2 \mid$		
				B_2 B_2 C	_	
				$S \mid B_2$		
			$\frac{B_2}{\zeta}$	$B_1 \mid \beta$	$\frac{A_2}{\beta}$	
				B_2		
				$A_2 \mid A_2 $		
				B_2 $\begin{bmatrix} E_1 \\ \eta \end{bmatrix}$		
		25 .	.12	B_2	$\times E_1$	
			$\frac{B_2}{E} = \frac{E}{\eta}$	$ \begin{array}{c c} E_2 \\ \nu \\ \hline 0 \\ \end{array} $	$ \begin{array}{c} \xi \\ \hline 0 \\ -1 \end{array} $	
				B_1		
				$A_1 \mid A_1 $		
				B_1 $B_2 \mid A$ $\zeta \mid$		
		25 .	15	B_1	$\times B_1$	
			$\frac{B_1}{\gamma}$	B_1 β	$\frac{\mathbf{a}_1}{\alpha}$	
				B_1 $A_2 \mid B$ $\beta \mid$		
				β B_1		
		_1	$\frac{B_1}{\gamma}$	$ \begin{array}{c c} E_2 & E_1 \\ \hline \nu & 0 \\ \xi & 1 \end{array} $	$\frac{\mu}{1}$	
		25 .	.18	B_1	$\times E_1$	
		<u>i</u>	$\frac{B_1}{\gamma}$	$ \begin{array}{c c} E_1 & E_2 \\ \hline \eta & 0 \\ \mu & 1 \end{array} $	$\frac{\xi}{0}$	

25.19 $A_2 \times A_1$	
$egin{array}{c c} A_2 & A_1 & A_2 \ \hline eta & lpha & 1 \end{array}$	
25.20 $A_2 \times B_2$	
$\begin{array}{c cc} A_2 & B_2 & \gamma \\ \hline \beta & \zeta & 1 \end{array}$	
25.21 $A_2 \times B_1$	
$\begin{array}{c cccc} A_2 & B_1 & B_2 \\ \hline \beta & \gamma & 1 \end{array}$	
25.22 $A_2 \times A_2$	
$\begin{array}{c cc} A_2 & A_2 & \alpha \\ \hline \beta & \beta & 1 \end{array}$	
25.23 $A_2 \times E_2$	
$\begin{array}{c cccc} A_2 & E_2 & E_2 & & \\ \hline \beta & \nu & 0 & -1 \\ \beta & \xi & 1 & 0 \\ \end{array}$	
$eta = eta = eta = eta = 0$ 25.24 $A_2 \times E_1$	
$\begin{array}{c cccc} A_2 & E_1 & E_1 \\ \hline \beta & \eta & 0 & -1 \\ \beta & \mu & 1 & 0 \end{array}$	
25.25 $E_2 \times A_1$ $E_2 \times A_1 \mid_{\nu} E_2 \times E_2$	
$ \begin{array}{c cccc} E_2 & A_1 & \nu & \xi \\ \hline \nu & \alpha & 1 & 0 \\ \hline \xi & \alpha & 0 & 1 \end{array} $	
25.26 $E_2 \times B_2$	
$ \begin{array}{c cccc} E_2 & B_2 & \eta & \mu \\ \hline \nu & \zeta & 1 & 0 \\ \hline \xi & \zeta & 0 & -1 \end{array} $	
ξ ζ 0 -1 25.27 $E_2 \times B_1$	
$ \begin{array}{c cccc} E_2 & B_1 & E_1 \\ \hline \nu & \gamma & 0 & 1 \\ \hline \xi & \gamma & 1 & 0 \end{array} $	
25.28 $E_2 \times A_2$ $ E_2 $	
$\begin{array}{c cccc} E_2 & A_2 & \nu & \xi \\ \hline \nu & \beta & 0 & -1 \\ \hline \xi & \beta & 1 & 0 \end{array}$	
25.29 $E_2 \times E_2$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{\xi}{\sqrt{2}}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0
ξ ξ $ \frac{\sqrt{2}}{2} $ 0 0 \cdot 25.30 $E_2 \times E_1$	$-\frac{\sqrt{2}}{2}$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	μ
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c} -\frac{\sqrt{2}}{2} \\ 0 \\ \hline 0 \end{array} $
$\xi \mu \mid 0 \mid \frac{\sqrt{2}}{2} \mid 0$ 25.31 $E_1 \times A_1$	$-\frac{\sqrt{2}}{2}$
$egin{array}{c c} E_1 & A_1 & E_1 & \mu \end{array}$	
$\begin{array}{c ccccc} \eta & \alpha & 1 & 0 \\ \hline \mu & \alpha & 0 & 1 \end{array}$	
25.32 $E_1 \times B_2$ $ E_2 $	
$ \begin{array}{c cccc} E_1 & B_2 & E_2 \\ \hline \eta & \zeta & 1 & 0 \\ \hline \mu & \zeta & 0 & -1 \end{array} $	
25.33 $E_1 \times B_1$	
$\begin{array}{c cccc} E_1 & B_1 & E_2 \\ \hline \eta & \gamma & 0 & 1 \\ \hline \mu & \gamma & 1 & 0 \end{array}$	
$ \frac{1}{\mu} \gamma \mid 1 0 $ 25.34 $E_1 \times A_2$	
E_1 $A_2 \begin{vmatrix} E_1 \\ \eta & \mu \end{vmatrix}$	
$\begin{array}{c ccccc} \eta & \beta & 0 & -1 \\ \hline \mu & \beta & 1 & 0 \\ \hline \end{array}$	
25.35 $E_1 \times E_2$	
$ \begin{array}{c ccccc} E_1 & E_2 & B_1 & B_2 & E_1 \\ \hline \eta & \nu & 0 & -\frac{\sqrt{2}}{2} & 0 \\ \eta & \xi & \frac{\sqrt{2}}{2} & 0 & -\frac{\sqrt{2}}{2} \\ \hline \mu & \nu & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} \\ \mu & \xi & 0 & \frac{\sqrt{2}}{2} & 0 \end{array} $	$\frac{\mu}{\frac{\sqrt{2}}{2}}$
$\begin{array}{c c c c} \mu & \nu & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} \\ \mu & \xi & 0 & \frac{\sqrt{2}}{2} & 0 \end{array}$	0 $\frac{\sqrt{2}}{2}$
25.36 $E_1 \times E_1$ $A_1 \mid A_2 \mid E_2$	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\frac{\xi}{-\frac{\sqrt{2}}{2}}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{0}{\frac{\sqrt{2}}{2}}$
26 Group	
26.1 $A_{1}^{'} \times A_{1}^{'}$	
$egin{array}{c c} A_1^{'} & A_1^{'} & A_1^{'} \ \hline lpha & lpha & 1 \end{array}$	

26.2 $A_{1}^{'} \times A_{2}^{''}$
$egin{array}{c c} A_1^{'} & A_2^{''} & \zeta \ \hline lpha & \zeta & 1 \ \hline \end{array}$
26.3 $A_{1}^{'} \times A_{1}^{''}$
$egin{array}{c c} A_1^{'} & A_1^{''} & \gamma \ \hline lpha & \gamma & 1 \ \hline \end{array}$
26.4 $A_{1}^{'} \times A_{2}^{'}$ $A_{2}^{'}$
$egin{array}{c c} A_1' & A_2' & A_2' \\ \hline lpha & eta & 1 \end{array}$
26.5 $A_1' \times E'$
$egin{array}{c cccc} A_1^{'} & E^{'} & E^{'} & \eta & \mu \ \hline lpha & \eta & 1 & 0 \ lpha & \mu & 0 & 1 \ \hline \end{array}$
26.6 $A_1' \times E''$
$egin{array}{c c c} A_1' & E'' & E'' & \nu & \xi \\ \hline lpha & u & 1 & 0 \\ lpha & \xi & 0 & 1 \\ \hline \end{array}$
26.7 $A_{2}^{''} \times A_{1}^{'}$
$egin{array}{c c} A_2^{''} & A_1^{'} & \zeta \ \hline \zeta & lpha & 1 \ \hline \end{array}$
26.8 $A_2'' \times A_2''$
$egin{array}{c c} A_2^{\prime\prime} & A_2^{\prime\prime} & A_1^{\prime\prime} \\ \hline \zeta & \zeta & 1 \end{array}$
26.9 $A_2^{"} \times A_1^{"}$ $\frac{A_2^{"} A_1^{"} \mid A_2^{'}}{\zeta \gamma \mid 1}$
$\frac{\frac{2}{\zeta} + \frac{1}{\gamma}}{\zeta}$ 26.10 $A_2'' \times A_2'$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
ζ β 1 26.11 $A_2'' \times E'$
$egin{array}{c ccc} A_2^{''} & E^{'} & E^{''} \\ \hline \zeta & \eta & 1 & 0 \\ \zeta & \mu & 0 & 1 \\ \hline \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c c c} \zeta & \nu & 1 & 0 \\ \zeta & \xi & 0 & 1 \\ \hline & 26.13 & A_1'' \times A_1' \\ \hline \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
γ α 1 26.14 $A_1'' \times A_2''$
$egin{array}{c c} A_1^{''} & A_2^{''} & A_2^{'} \ \hline \gamma & \zeta & 1 \end{array}$
26.15 $A_1^{''} \times A_1^{''}$
$egin{array}{c c} A_1^{\prime\prime} & A_1^{\prime\prime} & A_1^{\prime} \\ \hline \gamma & \gamma & 1 \end{array}$
26.16 $A_1'' \times A_2'$
$egin{array}{c c} A_1^{\prime\prime} & A_2^{\prime} & A_2^{\prime\prime} \ \hline \gamma & eta & 1 \end{array}$
$26.17 A_1^{"} \times E^{'}$
$egin{array}{c cccc} A_1^{''} & E^{'} & E^{''} & \nu & \xi \ \hline \gamma & \eta & 0 & -1 \ \gamma & \mu & 1 & 0 \ \hline \end{array}$
26.18 $A_1^{"} \times E^{"}$
$egin{array}{c cccc} A_1^{\prime\prime} & E^{\prime\prime} & E^{\prime\prime} & \mu \ \hline \gamma & u & 0 & -1 \ \gamma & \xi & 1 & 0 \ \end{array}$
26.19 $A_{2}^{'} \times A_{1}^{'}$
$egin{array}{c c} A_2' & A_1' & A_2' \ \hline eta & lpha & 1 \end{array}$
26.20 $A_2' \times A_2''$
$ \frac{A_2^{'} A_2^{''} A_1^{''}}{\beta \zeta 1} $
26.21 $A_2' \times A_1''$ $\frac{A_2' A_1'' \zeta}{\beta \gamma \mid 1}$
$ \frac{\beta}{\beta} \gamma \mid 1 $ 26.22 $A'_2 \times A'_2$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
β β 1 26.23 $A'_2 \times E'$
$egin{array}{c cccc} A_2^{'} & E^{'} & E^{'} & \eta & \mu \\ \hline eta & \eta & 0 & -1 \ eta & \mu & 1 & 0 \end{array}$
eta $\stackrel{\cdot}{\mu}$ \mid 1 0

26.24 $A_{2}^{'} \times E^{''}$	$27.7 A_{1g} \times B_{2u}$	27.30 $A_{1u} \times B_{1u}$	27.53 $B_{2g} \times B_{2g}$
$egin{array}{c cccc} A_2^{'} & E^{''} & E^{''} & & & & & & & & & & & & & & & & & & $	$ \begin{array}{c cc} A_{1g} & B_{2u} & B_{2u} \\ \hline \alpha_g & \zeta_u & 1 \end{array} $	$ \begin{array}{c cc} A_{1u} & B_{1u} & B_{1g} \\ \hline \alpha_u & \gamma_u & 1 \end{array} $	$\begin{array}{c c} B_{2g} & B_{2g} & A_{1g} \\ \hline \zeta_g & \zeta_g & 1 \end{array}$
$egin{array}{c ccc} eta & u & 0 & -1 \\ eta & \xi & 1 & 0 \end{array}$			
26.25 $E' \times A'_1$	$27.8 A_{1g} \times A_{2g}$ $\mid A_{2g}$	$27.31 A_{1u} \times B_{2u}$ $\mid B_{2g}$	27.54 $B_{2g} \times B_{1u}$
$egin{array}{c c c} E^{'} & A_{1}^{'} & E^{'} \\ \hline \eta & lpha & 1 & 0 \\ \hline \mu & lpha & 0 & 1 \\ \hline \end{array}$	$\begin{array}{c c} A_{1g} & A_{2g} & A_{2g} \\ \hline \alpha_g & \beta_g & 1 \end{array}$	$ \begin{array}{c cc} A_{1u} & B_{2u} & B_{2g} \\ \hline \alpha_u & \zeta_u & 1 \end{array} $	$\frac{B_{2g} B_{1u} \begin{vmatrix} A_{2u} \\ \beta_u \end{vmatrix}}{\zeta_g \gamma_u \mid 1}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\textbf{27.9} A_{1g} \times E_{2g}$	27.32 $A_{1u} \times A_{2g}$	
$26.26 E^{'} \times A_2^{''}$		· · · · · · · · · · · · · · · · · · ·	27.55 $B_{2g} \times B_{2u}$
	$egin{array}{c cccc} A_{1g} & E_{2g} & E_{2g} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} A_{1u} & A_{2g} & A_{2u} \ \hline A_{u} & eta_{g} & 1 \end{array}$	$\begin{array}{c cc} B_{2g} & B_{2u} & A_{1u} \\ \hline \zeta_g & \zeta_u & 1 \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{cccc} a_g & \zeta_g & \Gamma & \Gamma \ & & & & & & & & & & & & & & &$	27.33 $A_{1u} \times E_{2g}$	$egin{array}{ccc} egin{array}{ccc} egin{array}{cccc} egin{array}{ccc} egin{array}{ccc} egin{array}{ccc} egin{array}{ccc} egin{array}{ccc} egin{array}{ccc} egin{array}{ccc} egin{array}{ccc} egin{array}{cccc} egin{array}{ccc} egin{array}{cccc} egin{a$
		A_{1u} E_{2g} $\left egin{array}{c} E_{2u} \ u_u & \xi_u \end{array} ight.$	
26.27 $E' \times A''_1$	$egin{array}{c cccc} A_{1g} & E_{1u} & E_{1u} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} A_{1u} & E_{2g} & E_{2u} & & & & & & & & & & & & & & & & & & &$	$\begin{array}{c c} B_{2g} & A_{2g} & B_{1g} \\ \hline \zeta_g & \beta_g & 1 \end{array}$
$egin{array}{c c c} E^{'} & A_{1}^{''} & E^{''} \\ \hline \eta & \gamma & 0 & -1 \\ \hline \mu & \gamma & 1 & 0 \\ \hline \end{array}$		27.34 $A_{1u} \times E_{1u}$	27.57 $B_{2g} \times E_{2g}$
$egin{array}{c c c c c c c c c c c c c c c c c c c $	27.11 $A_{1g} \times E_{1g}$	A_{1u} E_{1u} $\begin{vmatrix} E_{1g} \\ \eta_g & \mu_g \end{vmatrix}$	
$\textbf{26.28} E^{'} \times A_2^{'}$	$egin{array}{c cccc} A_{1g} & E_{1g} & E_{1g} & & & & & & & & & & & & & & & & & & &$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c cccc} & E_{1g} & E_{1g} & & & & & & & & & & & & & & & & & & &$
		27.35 $A_{1u} \times E_{1g}$	
$egin{array}{c c c} E^{'} & A_{2}^{'} & \mu & \mu \ \hline \eta & eta & 0 & -1 \ \hline \mu & eta & 1 & 0 \ \hline \end{array}$	27.12 $A_{1g} \times E_{2u}$	$A_{1u} E_{1g} \begin{vmatrix} E_{1u} \\ \eta_u & \mu_u \end{vmatrix}$	27.58 $B_{2g} \times E_{1u}$
	A_{1g} E_{2u} V_u ξ_u	$\begin{array}{c cccc} A_{1u} & E_{1g} & \eta_u & \mu_u \\ \hline \alpha_u & \eta_g & 0 & -1 \\ \alpha_u & \mu_g & 1 & 0 \\ \end{array}$	$egin{array}{c cccc} B_{2g} & E_{1u} & E_{2u} & & & & & & & & & & & & & & & & & & &$
$26.29 E' \times E'$	$\begin{array}{c cccc} \alpha_g & \nu_u & 1 & 0 \\ \alpha_g & \xi_u & 0 & 1 \end{array}$		$\begin{array}{c cccc} \zeta_g & \eta_u & 1 & 0 \\ \zeta_g & \mu_u & 0 & -1 \end{array}$
$egin{array}{c c c c c c c c c c c c c c c c c c c $	27.13 $A_{2u} \times A_{1g}$	$27.36 A_{1u} \times E_{2u}$ $\mid E_{2q}$	27.59 $B_{2g} \times E_{1g}$
$ \begin{array}{c c c c} \eta & \eta & 0 & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} \\ \eta & \mu & -\frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} & 0 \end{array} $	$egin{array}{c c} A_{2u} & A_{1g} & A_{2u} \ \hline A_{u} & lpha_{g} & eta_{u} \ \hline eta_{u} & lpha_{g} & 1 \ \hline \end{array}$	$\begin{array}{c cccc} & E_{2g} & & \\ A_{1u} & E_{2u} & \nu_g & \xi_g \\ \hline \alpha_u & \nu_u & 0 & -1 \\ \alpha_u & \xi_u & 1 & 0 \\ \end{array}$	$egin{array}{c ccc} & E_{2g} & & E_{1g} & \nu_g & \xi_g \ \hline \zeta_g & \eta_g & 1 & 0 \ \zeta_g & \mu_g & 0 & -1 \ \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			$egin{array}{c c} \zeta_g & \eta_g & 1 & 0 \ \zeta_g & \mu_g & 0 & -1 \end{array}$
$\textbf{26.30} E^{'} \times E^{''}$	27.14 $A_{2u} \times A_{2u}$	$27.37 B_{1g} \times A_{1g}$	27.60 $B_{2g} \times E_{2u}$
$ig egin{array}{c c}A_1^{''}&A_2^{''}&E^{''}\end{array}$	$egin{array}{c c} A_{2u} & A_{2u} & A_{1g} \ \hline A_{u} & eta_{u} & 1 \ \hline \end{array}$	$egin{array}{c c} B_{1g} & A_{1g} & B_{1g} \ \hline \gamma_g & lpha_g & 1 \end{array}$	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{c cccc} B_{2g} & E_{2u} & E_{1u} & & & & & & & & & & & & & & & & & & &$
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		· ·	
	$egin{array}{c c} A_{2u} & A_{1u} & A_{2g} \ \hline A_{g} & lpha_{u} & A_{1u} & 1 \end{array}$	$egin{array}{c c} B_{1g} & A_{2u} & B_{2u} \ \hline \gamma_g & eta_u & 1 \end{array}$	27.61 $B_{1u} \times A_{1g}$
26.31 $E'' \times A'_1$	27.16 $A_{2u} \times B_{1g}$	27.39 $B_{1g} \times A_{1u}$	$\begin{array}{c c} B_{1u} & A_{1g} & B_{1u} \\ \hline \gamma_u & \alpha_g & 1 \end{array}$
$egin{array}{c c c} E^{''} & A_1^{'} & E^{''} \\ \hline u & lpha & 1 & 0 \\ \hline \xi & lpha & 0 & 1 \\ \hline \end{array}$	$\begin{array}{c c} A_{2u} & B_{1g} & B_{2u} \\ \hline \beta_u & \gamma_g & 1 \end{array}$	$egin{array}{c c} B_{1u} & B_{1u} \ & \gamma_u \end{array}$	27.62 $B_{1u} \times A_{2u}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{1}{\beta_u} \frac{1}{\gamma_g} \frac{1}{1}$	$ \begin{array}{c cc} B_{1g} & A_{1u} & \beta_{1u} \\ \hline \gamma_g & \alpha_u & 1 \end{array} $	
26.32 $E'' \times A_2''$	27.17 $A_{2u} \times B_{2g}$	27.40 $B_{1g} \times B_{1g}$	$\begin{array}{c cc} B_{1u} & A_{2u} & B_{2g} \\ \hline \gamma_u & \beta_u & 1 \end{array}$
$E^{''} = A_2^{''} egin{array}{ccc} E^{'} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} A_{2u} & B_{2g} & B_{1u} \ \hline eta_u & \zeta_g & 1 \end{array}$	$egin{array}{c c} B_{1g} & B_{1g} & A_{1g} \ \hline \gamma_g & \gamma_g & 1 \end{array}$	27.63 $B_{1u} \times A_{1u}$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$			$B_{1u} A_{1u} \mid B_{1g} \gamma_{g}$
26.33 $E'' \times A_1''$	27.18 $A_{2u} \times B_{1u}$	$27.41 B_{1g} \times B_{2g}$	$\begin{array}{c cccc} B_{1u} & A_{1u} & B_{1g} \\ \hline \gamma_u & \alpha_u & 1 \end{array}$
	$\begin{array}{c cc} A_{2u} & B_{1u} & B_{2g} \\ \hline \beta_u & \gamma_u & 1 \end{array}$	$egin{array}{c c} B_{1g} & B_{2g} & A_{2g} \ \hline \gamma_g & \zeta_g & 1 \end{array}$	27.64 $B_{1u} \times B_{1g}$
$egin{array}{c c c} E^{''} & A_1^{''} & E^{'} \\ \hline u & \gamma & 0 & -1 \\ \hline \xi & \gamma & 1 & 0 \\ \hline \end{array}$	$\textbf{27.19} A_{2u} \times B_{2u}$	$egin{array}{cccc} egin{array}{cccc} egin{array}{cccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccc} egin{array}{ccccccc} egin{array}{ccccccccc} egin{array}{cccccccccc} egin{array}{cccccccccc} egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c cccc} B_{1u} & B_{1g} & A_{1u} \\ \hline \gamma_u & \gamma_g & 1 \end{array}$
$\xi \gamma \mid 1 = 0$			$\gamma_u \gamma_g \mid 1$
$\textbf{26.34} E^{''} \times A_2^{'}$	$\begin{array}{c c} A_{2u} & B_{2u} & B_{1g} \\ \hline \beta_u & \zeta_u & 1 \end{array}$	$egin{array}{c ccc} B_{1g} & B_{1u} & A_{1u} \\ \hline \gamma_g & \gamma_u & 1 \end{array}$	27.65 $B_{1u} \times B_{2g}$
$egin{array}{c c c} E^{''} & A_2^{'} & E^{''} \\ \hline u & eta & 0 & -1 \\ \hline \xi & eta & 1 & 0 \\ \hline \end{array}$	27.20 $A_{2u} \times A_{2g}$	27.43 $B_{1g} \times B_{2u}$	$\begin{array}{c cc} B_{1u} & B_{2g} & A_{2u} \\ \hline \gamma_u & \zeta_g & 1 \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c} A_{2u} & A_{2g} & A_{1u} \\ \hline \beta_u & \beta_g & 1 \end{array}$	$ \begin{array}{c cc} B_{1g} & B_{2u} & A_{2u} \\ \hline \gamma_g & \zeta_u & 1 \end{array} $	
$26.35 E^{''} \times E^{'}$	$egin{array}{ c c c c c c c c c c c c c c c c c c c$	γ_g ζ_u 1	27.66 $B_{1u} \times B_{1u}$
$E^{''}$ $E^{'}$ $\begin{vmatrix} A_1^{''} & A_2^{''} & E^{''} \\ \gamma & \zeta & \nu & \xi \end{vmatrix}$	27.21 $A_{2u} \times E_{2g}$	27.44 $B_{1g} \times A_{2g}$	$\begin{array}{c cc} B_{1u} & B_{1u} & A_{1g} \\ \hline \gamma_u & \gamma_u & 1 \end{array}$
$ \begin{array}{c c c c c} \hline \nu & \eta & 0 & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} \\ \nu & \mu & -\frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} & 0 \end{array} $	$egin{array}{c cccc} A_{2u} & E_{2g} & E_{2u} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c c} B_{1g} & A_{2g} & B_{2g} \ \hline \gamma_g & eta_g & 1 \end{array}$	
	$egin{array}{c ccc} eta_u & u_g & 1 & 0 \ eta_u & \xi_g & 0 & 1 \end{array}$		27.67 $B_{1u} \times B_{2u}$
	27.22 $A_{2u} \times E_{1u}$	$27.45 B_{1g} \times E_{2g}$ $\mid E_{1g}$	$ \begin{array}{c cc} B_{1u} & B_{2u} & \beta_g \\ \hline \gamma_u & \zeta_u & 1 \end{array} $
$26.36 E'' \times E''$	$egin{array}{c cccc} A_{2u} & E_{1u} & E_{1g} & & & & & & & & & & & & & & & & & & &$	$egin{array}{c cccc} B_{1g} & E_{2g} & E_{1g} & & & & & & & & & & & & & & & & & & &$	$27.68 B_{1u} \times A_{2g}$
$E^{''}$ $E^{''}$ $\begin{vmatrix} A_2^{'} & A_1^{'} & E^{'} \\ \beta & \alpha & \eta & \mu \end{vmatrix}$	$egin{array}{c cccc} eta_u & \eta_u & 1 & 0 \ eta_u & \mu_u & 0 & 1 \end{array}$		
$\begin{array}{c cccc} \nu & \nu & 0 & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} \\ \nu & \xi & -\frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} & 0 \end{array}$	27.23 $A_{2u} \times E_{1g}$	$27.46 B_{1g} \times E_{1u}$ $\mid E_{2u}$	$egin{array}{c c} B_{1u} & A_{2g} & B_{2u} \ \hline \gamma_u & eta_g & 1 \end{array}$
$\begin{array}{c cccc} \xi & \nu & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} & 0 \\ \xi & \xi & 0 & \frac{\sqrt{2}}{2} & 0 & -\frac{\sqrt{2}}{2} \end{array}$	A_{2u} E_{1g} $\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} \mu_u$	$egin{array}{c ccc} B_{1g} & E_{1u} & E_{2u} & & & & & & & \\ \hline P_{1g} & E_{1u} & \nu_u & \xi_u & & & & & \\ \hline \gamma_g & \eta_u & 0 & 1 & & & & & \\ \gamma_g & \mu_u & 1 & 0 & & & & & \\ \hline \end{array}$	27.69 $B_{1u} \times E_{2g}$
27 Group D_{6h}	$egin{array}{c cccc} A_{2u} & E_{1g} & E_{1u} & & & & & & & & & & & & & & & & & & &$		
	27.24 $A_{2u} \times E_{2u}$	27.47 $B_{1g} \times E_{1g}$	$\begin{array}{c cccc} B_{1u} & E_{2g} & E_{1u} \\ \hline \gamma_u & \nu_g & 1 & 0 \\ \gamma_u & \xi_g & 0 & -1 \end{array}$
$27.1 A_{1g} \times A_{1g}$ $\mid A_{1g}$	A_{2u} E_{2u} $\left egin{array}{c} E_{2g} \ u_g & \xi_g \end{array} ight.$	$egin{array}{c cccc} & E_{2g} & & E_{2g} & & & & & & & & & & & & & & & & & & &$	
$egin{array}{c c} A_{1g} & A_{1g} & A_{1g} \ \hline lpha_g & lpha_g & 1 \ \hline \end{array}$	$\begin{array}{c cccc} A_{2u} & E_{2u} & E_{2g} & \\ \hline A_{2u} & E_{2u} & \nu_{g} & \xi_{g} \\ \hline \beta_{u} & \nu_{u} & 1 & 0 \\ \beta_{u} & \xi_{u} & 0 & 1 \\ \hline \end{array}$		$27.70 B_{1u} \times E_{1u}$ $\mid E_{2g}$
$\textbf{27.2} A_{1g} \times A_{2u}$	27.25 $A_{1u} \times A_{1g}$	27.48 $B_{1g} \times E_{2u}$	$\begin{array}{c cccc} B_{1u} & E_{1u} & E_{2g} & & \\ \hline \gamma_u & \eta_u & 1 & 0 \\ \gamma_u & \mu_u & 0 & -1 \end{array}$
	-	B_{1g} E_{2u} $\begin{vmatrix} E_{1u} \\ \eta_u & \mu_u \end{vmatrix}$	
$ \begin{array}{c cccc} A_{1g} & A_{2u} & A_{2u} \\ \hline \alpha_g & \beta_u & 1 \end{array} $	$ \begin{array}{c cc} A_{1u} & A_{1g} & A_{1u} \\ \hline \alpha_u & \alpha_g & 1 \end{array} $	$egin{array}{c c c c c} \gamma_g & u_u & 0 & 1 \\ \gamma_g & \xi_u & 1 & 0 \\ \end{array}$	27.71 $B_{1u} \times E_{1g}$
$\textbf{27.3} A_{1g} \times A_{1u}$	27.26 $A_{1u} \times A_{2u}$	27.49 $B_{2g} \times A_{1g}$	$\begin{array}{c cccc} B_{1u} & E_{1g} & E_{2u} \\ \hline \gamma_u & \eta_g & 1 & 0 \\ \gamma_u & \mu_g & 0 & -1 \end{array}$
$\begin{array}{c cccc} A_{1g} & A_{1u} & A_{1u} \\ \hline \alpha_g & \alpha_u & 1 \end{array}$	$\begin{array}{c cc} A_{1u} & A_{2g} \\ \hline A_{0u} & A_{2u} & \beta_{g} \\ \hline \alpha_{u} & \beta_{u} & 1 \end{array}$	B_{2g} A_{1g} $\begin{vmatrix} B_{2g} \\ \zeta_g \end{vmatrix}$	$\begin{array}{c ccc} \gamma_u & \eta_g & 1 & 0 \\ \gamma_u & \mu_g & 0 & -1 \end{array}$
		$\zeta_g = lpha_g \mid 1$	27.72 $B_{1u} \times E_{2u}$
$27.4 A_{1g} \times B_{1g}$	$27.27 A_{1u} \times A_{1u}$	$27.50 B_{2g} \times A_{2u}$	$B_{1u} E_{2u} \begin{vmatrix} E_{1g} \\ \eta_g & \mu_g \end{vmatrix}$
$\begin{array}{c c} A_{1g} & B_{1g} & B_{1g} \\ \hline \alpha_g & \gamma_g & 1 \end{array}$	$ \begin{array}{c cc} A_{1u} & A_{1u} & A_{1g} \\ \hline \alpha_u & \alpha_u & 1 \end{array} $	$egin{array}{c c} B_{2g} & A_{2u} & B_{1u} \ \hline \zeta_g & eta_u & 1 \end{array}$	$\begin{array}{c cccc} \gamma_u & \nu_u & 1 & 0 \\ \gamma_u & \xi_u & 0 & -1 \end{array}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{cccc} lpha_u & lpha_u & 1 \ & & & & & & & & & & & & & & & & &$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	27.73 $B_{2u} \times A_{1g}$
			· ·
$ \begin{array}{c cc} A_{1g} & B_{2g} & B_{2g} \\ \hline \alpha_g & \zeta_g & 1 \end{array} $	$\begin{array}{c c} A_{1u} & B_{1g} & B_{1u} \\ \hline \alpha_u & \gamma_g & 1 \end{array}$	$egin{array}{c c} B_{2g} & A_{1u} & B_{2u} \ \hline \zeta_g & lpha_u & 1 \end{array}$	$\begin{array}{c cc} B_{2u} & A_{1g} & B_{2u} \\ \hline \zeta_u & \alpha_g & 1 \end{array}$
27.6 $A_{1g} \times B_{1u}$	27.29 $A_{1u} \times B_{2g}$	27.52 $B_{2g} \times B_{1g}$	27.74 $B_{2u} \times A_{2u}$
$egin{array}{c c} A_{1g} & B_{1u} & B_{1u} \ \hline lpha_q & \gamma_u & 1 \ \hline \end{array}$	$egin{array}{c c} A_{1u} & B_{2g} & B_{2u} \ \hline lpha_u & \zeta_g & 1 \end{array}$	$egin{array}{c c} B_{2g} & B_{1g} & A_{2g} \ \hline \zeta_{g} & \gamma_{g} & 1 \end{array}$	$\begin{array}{c c} B_{2u} & A_{2u} & B_{1g} \\ \hline \zeta_u & \beta_u & 1 \end{array}$
$\alpha_g \gamma_u \mid 1$	$\alpha_u \zeta_g \mid 1$	$\frac{-g}{\zeta_g} - \frac{g}{\gamma_g} \mid 1$	$\frac{\zeta_u - \zeta_u + ig}{\zeta_u - \beta_u + 1}$
		12	

27.75	
B_{2u}	$ \begin{array}{c c} & B_{2g} \\ A_{1u} & \zeta_g \\ \hline \alpha_u & 1 \end{array} $
	$B_{2u} \times B_{1g}$
$\frac{B_{2u}}{\zeta_u}$	$ \begin{array}{c c} & A_{2u} \\ B_{1g} & \beta_{u} \\ \hline \gamma_{g} & 1 \end{array} $
	$B_{2u} \times B_{2q}$
	3
$\frac{B_{2u}}{\zeta_u}$	$ \begin{array}{c c} B_{2g} & A_{1u} \\ \hline \zeta_g & 1 \end{array} $
27.78	$B_{2u} \times B_{1u}$
B_{2u}	$ \begin{array}{c c} B_{1u} & A_{2g} \\ \hline \beta_g & \\ \hline \gamma_u & 1 \end{array} $
ζ_u	$\gamma_u \mid 1$
	$B_{2u} \times B_{2u}$
B_{2u}	$ \begin{array}{c c} & A_{1g} \\ B_{2u} & \alpha_g \\ \hline \zeta_u & 1 \end{array} $
	$B_{2u} \times A_{2g}$
$\frac{B_{2u}}{\zeta_u}$	$ \begin{array}{c c} A_{2g} & B_{1u} \\ \hline A_{g} & \gamma_{u} \end{array} $
	$B_{2u} \times E_{2a}$
	3
$\frac{B_{2u}}{\zeta_u} \frac{E_2}{\nu}$	$ \begin{array}{c cccc} E_{1u} & & \\ \eta_u & \mu_u & \\ g & 1 & 0 \end{array} $
	$B_{2u} \times E_{1u}$ $\mid E_{2q}$
$\frac{B_{2u}}{\zeta_u} \frac{E}{\eta}$	$ \begin{array}{c ccc} E_{2g} \\ \nu_g & \xi_g \\ \nu_u & 0 & 1 \\ \nu_u & 1 & 0 \end{array} $
ζ_u μ	$u_u \mid 1 = 0$
	$B_{2u} \times E_{1g}$
$\frac{B_{2u}}{C_{-}}$	$ \begin{array}{c cccc} & E_{2u} \\ & \nu_u & \xi_u \\ & g & 0 & 1 \\ & g & 1 & 0 \end{array} $
ζ_u μ	$\begin{bmatrix} g & 1 & 1 \\ g & 1 & 0 \end{bmatrix}$
	$B_{2u} \times E_{2u}$
B_{2u} E_{2u}	$ \begin{array}{c cccc} E_{1g} \\ \eta_g & \mu_g \end{array} $ $ \begin{array}{c ccccc} u & 0 & 1 \\ u & 1 & 0 \end{array} $
$\zeta_u \qquad \nu$ $\zeta_u \qquad \xi$	$\begin{bmatrix} u & 0 & 1 \\ u & 1 & 0 \end{bmatrix}$
27.85	$A_{2g} \times A_{1g}$
A_{2g}	$ \begin{array}{c c} A_{1g} & A_{2g} \\ A_{g} & B_{g} \end{array} $
	$A_{2g} \times A_{2u}$
$\frac{A_{2g}}{\beta_a}$	$ \begin{array}{c c} A_{1u} & A_{1u} \\ A_{2u} & \alpha_u \\ \hline \beta_u & 1 \end{array} $
	$A_{2g} \times A_{1u}$
$\frac{A_{2g}}{\beta_g}$	$ \begin{array}{c c} A_{1u} & A_{2u} \\ A_{1u} & \beta_{u} \\ \hline \alpha_{u} & 1 \end{array} $
27.88	$A_{2g} \times B_{1g}$
A_{2g}	$ \begin{array}{c c} B_{1g} & B_{2g} \\ \hline \gamma_g & 1 \end{array} $
$oldsymbol{eta_g}$	$\gamma_g \mid 1$
	$A_{2g} \times B_{2g}$
A_{2g}	$ \begin{array}{c c} B_{2g} & B_{1g} \\ \gamma_g & \zeta_g & 1 \end{array} $
	$A_{2g} \times B_{1u}$ $\mid B_{2u}$
$\frac{A_{2g}}{\beta_g}$	$ \begin{array}{c c} B_{1u} & B_{2u} \\ \hline \gamma_u & 1 \end{array} $
	$A_{2q} \times B_{2u}$
	·
$\frac{-2g}{\beta_g}$	$ \begin{array}{c c} B_{1u} \\ \gamma_u \\ \hline \zeta_u & 1 \end{array} $
27.92	$A_{2g} \times A_{2g}$
A_{2g}	$ \begin{array}{c c} A_{2g} & A_{1g} \\ \hline A_{g} & \alpha_{g} \end{array} $
	$A_{2g} \times E_{2g}$ $ _{E_{2g}}$
$\frac{A_{2g}}{\beta_{\sigma}}$ $\frac{E_{2}}{\nu}$	$ \begin{array}{c cccc} E_{2g} & E_{2g} \\ \nu_g & \xi_g \\ g & 0 & -1 \\ g & 1 & 0 \end{array} $
	$A_{2g} \times E_{1u}$
A_{2g} E_1	$ \begin{array}{c cccc} E_{1u} & E_{1u} \\ \eta_u & \eta_u & \mu_u \\ \mu_u & 0 & -1 \\ \mu_u & 1 & 0 \end{array} $
$egin{array}{ccc} eta_g & \eta_i \ eta_g & \mu_i \end{array}$	
	$A_{2g} \times E_{1g}$
	E_{1g}
A_{2g} E_1	$\frac{1g \mid \eta_g \mid \mu_g}{1}$
$\begin{array}{ccc} A_{2g} & E_{1} \\ \hline \beta_{g} & \eta_{g} \\ \beta_{g} & \mu_{g} \end{array}$	$egin{array}{c c c c} rac{1g}{g} & \eta_g & \mu_g \\ \hline g & 0 & -1 \\ g & 1 & 0 \\ \hline \end{array}$
	$ \begin{array}{c cccc} & \eta_g & \mu_g \\ \hline g & 0 & -1 \\ g & 1 & 0 \end{array} $ $ A_{2g} \times E_{2u} $
27.96	$A_{2g} \times E_{2u}$
27.96	

	E_{2g} : $\mid E_{2g} \mid$		
$rac{E_{2g}}{ u_g}$	$ \begin{array}{c c} A_{1g} & E_{2g} \\ \hline \alpha_g & 1 \\ \hline \alpha_g & 0 \end{array} $	$\frac{\xi_g}{0}$	
	E_{2g}		
$rac{E_{2g}}{ u_g}$	$ \begin{array}{c c} A_{2u} & E_{2u} \\ \hline \beta_u & 1 \\ \hline \beta_u & 0 \end{array} $	$\frac{\xi_u}{0}$	
	$\beta_u \mid 0$ E_{2g}		
	$ \begin{array}{c c} E_{2u} \\ A_{1u} & \nu_u \\ \hline \alpha_u & 0 \end{array} $		
$\frac{\nu_g}{\xi_a}$	$\begin{array}{c ccc} \alpha_u & 0 \\ \hline \alpha_u & 1 \end{array}$	$\frac{-1}{0}$	
27.100			,
E_{2g}	$B_{1g} \mid \begin{array}{c} E_{1g} \\ \eta_g \end{array}$	μ_g	
	$\begin{array}{c ccc} \gamma_g & 0 \\ \hline \gamma_g & 1 \end{array}$		
27.101			,
E_{2g}	$ \begin{array}{c c} B_{2g} & E_{1g} \\ & \eta_g \end{array} $ $ \zeta_g & 1 \\ \zeta_g & 0 $	$\frac{\mu_g}{0}$	
$rac{ u_g}{\xi_g}$	$\frac{\varsigma_g}{\zeta_g} = 0$	-1	
27.102			}
$rac{E_{2g}}{ u_g}$	$ \begin{array}{c c} B_{1u} & B_{1u} \\ \gamma_u & 1 \\ \hline \gamma_u & 0 \end{array} $	$\frac{\mu_u}{0}$	
27.103	_		,
$rac{E_{2g}}{ u_g}$	$B_{2u} \mid \begin{array}{c} E_{1u} \\ \eta_u \end{array}$ $\zeta_u \mid 0$	$\frac{\mu_u}{1}$	
ξ_g	ζ_u 1	0	
27.104	_	_	•
$ \frac{\nu_{2g}}{\nu_{g}} $	$ \begin{array}{c c} A_{2g} & E_{2g} \\ \hline \beta_g & 0 \\ \hline \beta_g & 1 \end{array} $	$\frac{\varsigma_g}{-1}$	
27.105			,
	_	_	
$egin{array}{c cccc} u_g & u_g & onumber \ u_g & onumber \ onumber \ $	$ \begin{array}{c c} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{array} $	$\begin{array}{ c c }\hline 0\\ \frac{\sqrt{2}}{2}\\ \hline \end{array}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$
$\begin{array}{c cccc} \xi_g & \nu_g & \Sigma \\ \xi_g & \xi_g & \Gamma \end{array}$	$ \begin{array}{c c} \hline \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{array} $	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$	$0\\ -\frac{\sqrt{2}}{2}$
27.106	J		
	J		
	J		
$ \begin{array}{c ccc} E_{2g} & E_{1u} & S_{2u} \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & \frac{\sqrt{2}}{2} \\ \xi_g & \eta_u & \frac{\sqrt{2}}{2} \\ \xi_g & \mu_u & 0 \end{array} $	$\begin{array}{c c} B_{1u} & B_{1u} \\ \gamma_u & \gamma_u \end{array}$ $\begin{array}{c c} \frac{1}{2} & -\frac{\sqrt{2}}{2} \\ 0 & \frac{\sqrt{2}}{2} \end{array}$	$ \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $ $ \begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix} $	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \end{array} $
$egin{array}{c cccc} E_{2g} & E_{1u} & B_2 \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & rac{\sqrt{2}}{2} \\ \hline \xi_g & \eta_u & rac{\sqrt{2}}{2} \\ \xi_g & \mu_u & 0 \\ \hline egin{array}{c ccc} 27.107 \\ \hline \end{array}$	$ \begin{array}{c c} & B_{1u} \\ & \gamma_u \end{array} $ $ \begin{array}{c c} & -\frac{\sqrt{2}}{2} \\ \hline 2 & 0 \end{array} $ $ \begin{array}{c c} \hline 2 & 0 \\ \hline \sqrt{2} & \frac{\sqrt{2}}{2} \end{array} $ $ \begin{array}{c c} & E_{2g} \end{array} $	$ \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $ $ \begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix} $ $ \times E_{1g}$	$ \begin{array}{c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ \hline 0 \\ -\frac{\sqrt{2}}{2} \end{array} $
$egin{array}{c cccc} E_{2g} & E_{1u} & B_2 \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & rac{\sqrt{2}}{2} \\ \hline \xi_g & \eta_u & rac{\sqrt{2}}{2} \\ \xi_g & \mu_u & 0 \\ \hline egin{array}{c ccc} 27.107 \\ \hline \end{array}$	$ \begin{array}{c c} & B_{1u} \\ & \gamma_u \end{array} $ $ \begin{array}{c c} & -\frac{\sqrt{2}}{2} \\ \hline 2 & 0 \end{array} $ $ \begin{array}{c c} \hline 2 & 0 \\ \hline \sqrt{2} & \frac{\sqrt{2}}{2} \end{array} $ $ \begin{array}{c c} & E_{2g} \end{array} $	$ \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $ $ \begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix} $ $ \times E_{1g}$	$ \begin{array}{c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ \hline 0 \\ -\frac{\sqrt{2}}{2} \end{array} $
$egin{array}{c cccc} E_{2g} & E_{1u} & B_2 \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & rac{\sqrt{2}}{2} \\ \hline \xi_g & \eta_u & rac{\sqrt{2}}{2} \\ \xi_g & \mu_u & 0 \\ \hline egin{array}{c ccc} 27.107 \\ \hline \end{array}$	$ \begin{array}{c c} & B_{1u} \\ & \gamma_u \end{array} $ $ \begin{array}{c c} & -\frac{\sqrt{2}}{2} \\ \hline 2 & 0 \end{array} $ $ \begin{array}{c c} \hline 2 & 0 \\ \hline \sqrt{2} & \frac{\sqrt{2}}{2} \end{array} $ $ \begin{array}{c c} & E_{2g} \end{array} $	$ \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $ $ \begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix} $ $ \times E_{1g}$	$ \begin{array}{c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ \hline 0 \\ -\frac{\sqrt{2}}{2} \end{array} $
$egin{array}{c cccc} E_{2g} & E_{1u} & S_2 \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & rac{\sqrt{2}}{2} \\ \xi_g & \eta_u & 0 \\ \hline & & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ E_{2g} & E_{1g} & S_2 \\ \hline & & & & & & \\ \hline & & & & & & \\ E_{2g} & H_g & S_2 \\ \hline & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & & \\ & & & & & & \\ \hline & & & & & \\ \hline & & & & & \\ \hline & & & & & & \\ \hline$	$\begin{array}{c c} B_{1u} & B_{1u} \\ \gamma_u & \gamma_u \\ \hline \frac{1}{2} & -\frac{\sqrt{2}}{2} \\ \hline \frac{2}{2} & 0 \\ \hline \end{array}$ $\begin{array}{c c} E_{2g} & B_{1g} \\ g & \gamma_g \\ \hline \end{array}$ $\begin{array}{c c} W_{2g} & W_{2g} \\ \hline W_{2g} & W_$	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} = 0$ $-\frac{\sqrt{2}}{2}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix}$ $-\frac{\sqrt{2}}{2}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	$ \frac{\mu_u}{-\frac{\sqrt{2}}{2}} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} $
$egin{array}{c c c} E_{2g} & E_{1u} & B_2 \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & rac{\sqrt{2}}{2} \\ \xi_g & \eta_u & 0 \\ \hline & 27.107 \\ \hline E_{2g} & E_{1g} & \xi_g \\ \hline \nu_g & \eta_g & -2 \\ \nu_g & \mu_g & 0 \\ \hline & \xi_g & \mu_g & 0 \\ \hline & \xi_g & \mu_g & 0 \\ \hline & 27.108 \\ \hline \end{array}$	$ \begin{array}{c c} & B_{1u} \\ & \gamma_{u} \end{array} $ $ \begin{array}{c c} & E_{2g} \end{array} $ $ \begin{array}{c c} & E_{2g} \end{array} $ $ \begin{array}{c c} & C_{2g} \end{array} $	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} = \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$	μ_u $-\frac{\sqrt{2}}{2}$ 0 0 $-\frac{\sqrt{2}}{2}$ μ_g $-\frac{\sqrt{2}}{2}$ 0 0 $-\frac{\sqrt{2}}{2}$
$egin{array}{c c c} E_{2g} & E_{1u} & B_2 \\ \hline \nu_g & \eta_u & 0 \\ \nu_g & \mu_u & rac{\sqrt{2}}{2} \\ \hline \xi_g & \eta_u & 0 \\ \hline 27.107 \\ \hline E_{2g} & E_{1g} & \zeta \\ \hline \nu_g & \eta_g & -2 \\ \nu_g & \mu_g & 0 \\ \hline \xi_g & \eta_g & \zeta \\ \hline 27.108 \\ \hline 27.108 \\ \hline E_{2g} & E_{2u} & A_2 \\ \hline eta_g & E_{2u} & A_3 \\ eta_g & B_2 \\ \hline eta_g & B_2 \\ \hline eta_g & \eta_g & 0 \\ \hline eta_g & \mu_g & 0 \\ \hline eta_g & B_2 \\ \hline eta_g & \eta_g & 0 \\ \hline eta_g & \mu_g & 0 \\ \hline eta_g & 0 \\ $	$egin{array}{c c} E_{u} & B_{1u} \\ \hline E_{u} & \gamma_{u} \\ \hline E_{2} & 0 \\ \hline E_{2g} & 0 \\ \hline E_{2g} & E_{2g} \\ \hline E_{2g} & B_{1g} \\ \hline E_{2g} & 0 \\ \hline $	$ \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $ $ 0 $ $ \times E_{1g} $ $ \begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix} $ $ \begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix} $ $ 0 $ $ \times E_{2u} $ $ \begin{vmatrix} E_{2u} \\ \nu_u \end{vmatrix} $	μ_u $-\frac{\sqrt{2}}{2}$ 0 0 $-\frac{\sqrt{2}}{2}$ 0 0 $-\frac{\sqrt{2}}{2}$ 0 0 $-\frac{\sqrt{2}}{2}$
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$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c} F_{1u} & F_{1u} \\ F_{2u} & F_{2u} \\ \hline F_{2u} & F_{2u} \\ \hline$	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} = \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ v_u \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\frac{\mu_u}{0}$	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ \hline 0 \\ -\frac{\sqrt{2}}{2} \\ \hline 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ \hline 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$
$egin{array}{c ccccc} E_{2g} & E_{1u} & S_{2u} \\ \hline $	$\begin{array}{c c} E_{u} & B_{1u} \\ \hline E_{u} & \gamma_{u} \\ \hline E_{u} & \gamma_{u} \\ \hline E_{u} & C_{u} \\ \hline E_$	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix} = \begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix}$ $\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} E_{2u} \\ \nu_u \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\frac{\mu_u}{0}$ 1	$ \mu_{u} - \frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$
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$\begin{bmatrix} \overline{2} & 0 \\ 0 & 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 \\ 0 & 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 \\ 0 & 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 \\ 0 & 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 \\ 0 \\ 0 & 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 \\ 0 \\ 0 \end{bmatrix}$ $\begin{bmatrix} \overline{2} & 0 $	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} E_{2u} \\ \nu_u \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\frac{\mu_u}{0}$ 1 $\times A_{2u}$ $\frac{\mu_g}{0}$ 1 $\times B_{1g}$ $\frac{\xi_u}{1}$ 0	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{bmatrix} a_{1} & B_{1u} \\ \gamma_{u} & \gamma_{u} \end{bmatrix}$ $\begin{bmatrix} a_{1} & A_{1u} \\ \gamma_{u} & A_{1u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} a_{2} & A_{2u} \\ \gamma_{2} & A_{2$	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} E_{2u} \\ \nu_u \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\begin{vmatrix} \mu_u \\ 0 \\ 1 \end{vmatrix}$ $\times A_{1u}$ μ_g 0 1 $\times B_{1g}$ $\times B_{2g}$	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{bmatrix} a_{1} & B_{1u} \\ \gamma_{u} & \gamma_{u} \end{bmatrix}$ $\begin{bmatrix} a_{1} & A_{1u} \\ \gamma_{u} \end{bmatrix}$ $\begin{bmatrix} 2g & B_{1g} \\ \sqrt{2} \\ 2g & A_{1u} \end{bmatrix}$ $\begin{bmatrix} \sqrt{2} \\ 2g & A_{2g} \end{bmatrix}$ $\begin{bmatrix} \sqrt{2} \\ 2g & A_{2g} \end{bmatrix}$ $\begin{bmatrix} 2g & A_{2g} \\ 2g & A_{2g} \end{bmatrix}$	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} E_{2u} \\ \nu_u \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\frac{\mu_g}{0}$ 1 $\times A_{1u}$ $\frac{\mu_g}{0}$ 1 $\times B_{1g}$ $\frac{\xi_u}{0}$ 0 $\times B_{2g}$ $\frac{\xi_u}{0}$	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{bmatrix} a & b \\ a & \gamma_u \\ \hline a & \gamma_u \\ \hline a & \gamma_u \\ \hline a & -\frac{\sqrt{2}}{2} \\ \hline a & -\frac{\sqrt{2}}{2} \\ \hline a & b \\ \hline a & c \\ $	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \\ 0 \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\begin{vmatrix} \mu_u \\ 0 \\ 1 \end{vmatrix}$ $\times A_{1u}$ $\frac{\mu_g}{0}$ 1 $\times B_{1g}$ $\frac{\xi_u}{1}$ 0 $\times B_{2g}$ $\frac{\xi_u}{0}$ -1	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{bmatrix} x_{1} & B_{1u} \\ Y_{1u} & Y_{1u} \end{bmatrix}$ $\begin{bmatrix} x_{1} & A_{1u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{1u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_{2u} \end{bmatrix}$ $\begin{bmatrix} x_{2} & A_{2u} \\ Y_{2} & A_$	$\begin{vmatrix} E_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{1g}$ $\begin{vmatrix} E_{1g} \\ \eta_g \\ 0 \end{vmatrix}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times E_{2u}$ $\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$ $\times A_{1g}$ $\begin{vmatrix} \mu_u \\ 0 \\ 1 \end{vmatrix}$ $\times A_{1u}$ $\frac{\mu_g}{0}$ 1 $\times B_{1g}$ $\frac{\xi_u}{1}$ 0 $\times B_{2g}$ $\frac{\xi_u}{0}$ -1	$ \begin{array}{c c} \mu_u \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} $

	07.100 E E
27.115 $E_{1u} \times B_{2u}$ $ E_{2g} $	27.132 $E_{1g} \times E_{2u}$ $ B_{2u} B_{1u} E_{1u}$
$\begin{array}{c cccc} E_{1u} & B_{2u} & \nu_g & \xi_g \\ \hline \eta_u & \zeta_u & 0 & 1 \end{array}$	E_{1g} E_{2u} ζ_u γ_u η_u μ_u
$\mu_u \zeta_u \mid 1 0$	$\eta_g \xi_u \mid \frac{\sqrt{2}}{2} \mid 0 \mid -\frac{\sqrt{2}}{2} 0$
27.116 $E_{1u} \times A_{2g}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c cccc} E_{1u} & A_{2g} & E_{1u} \\ \hline \eta_u & \beta_g & 0 & -1 \end{array}$	27.133 $E_{2u} \times A_{1g}$
$\begin{array}{c cccc} \eta_u & \beta_g & 0 & -1 \\ \hline \mu_u & \beta_g & 1 & 0 \end{array}$	$egin{array}{c c} E_{2u} & E_{2u} & E_{2u} \ \hline u_u & lpha_g & u_u & \xi_u \ \hline \end{array}$
27.117 $E_{1u} \times E_{2g}$	$egin{array}{c cccc} u_u & lpha_g & 1 & 0 \ \hline \xi_u & lpha_g & 0 & 1 \ \end{array}$
$E_{1u} E_{2g} \begin{vmatrix} B_{2u} & B_{1u} & E_{1u} \\ \zeta_u & \gamma_u & \eta_u & \mu_u \end{vmatrix}$	27.134 $E_{2u} \times A_{2u}$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$E_{2u} A_{2u} \mid \begin{matrix} E_{2g} \\ \nu_g & \xi_g \end{matrix}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c cccc} \nu_u & \beta_u & 1 & 0 \\ \hline \xi_u & \beta_u & 0 & 1 \end{array}$
27.118 $E_{1u} \times E_{1u}$	27.135 $E_{2u} \times A_{1u}$
E_{1u} E_{1u} $\begin{vmatrix} A_{2g} & A_{1g} & E_{2g} \\ \beta_g & \alpha_g & \nu_g & \xi_g \end{vmatrix}$	$E_{2u} A_{1u} \mid E_{2g} \\ \nu_g \xi_g$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccc} \hline \nu_u & \alpha_u & 0 & -1 \\ \hline \xi_u & \alpha_u & 1 & 0 \\ \hline \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	27.136 $E_{2u} \times B_{1q}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	E_{2u} B_{1g} $\begin{vmatrix} E_{1u} \\ \eta_u & \mu_u \end{vmatrix}$
$\mid A_{2u} \mid A_{1u} \mid E_{2u}$	$ u_u \gamma_g \mid 0 1 $
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$\xi_u \gamma_g \mid 1 0$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	27.137 $E_{2u} \times B_{2g}$
	$egin{array}{c c c} E_{2u} & B_{2g} & \eta_u & \mu_u \\ \hline u_u & \zeta_g & 1 & 0 \\ \hline \end{array}$
27.120 $E_{1u} \times E_{2u}$ $ B_{2g} B_{1g} E_{1g}$	$\xi_u \zeta_g \mid 0 -1$
$\frac{E_{1u} E_{2u} \mid \zeta_g \mid \gamma_g \mid \eta_g \mu_g}{\eta_u \nu_u \mid -\frac{\sqrt{2}}{2} \mid 0 \mid 0 \frac{\sqrt{2}}{2}}$	27.138 $E_{2u} \times B_{1u}$ $ E_{1g} $
$\eta_u \xi_u 0 \frac{\sqrt{2}}{2} -\frac{\sqrt{2}}{2} 0$	$\begin{array}{c ccc} E_{2u} & B_{1u} & \stackrel{D_{1g}}{\eta_g} & \mu_g \\ \hline \nu_u & \gamma_u & 1 & 0 \end{array}$
$\begin{array}{c c c c c} \mu_u & \nu_u & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 0\\ \mu_u & \xi_u & \frac{\sqrt{2}}{2} & 0 & 0 & \frac{\sqrt{2}}{2} \end{array}$	$\frac{\xi_u - \gamma_u}{\xi_u - 1}$
27.121 $E_{1g} \times A_{1g}$	27.139 $E_{2u} \times B_{2u}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$E_{2u} B_{2u} \begin{vmatrix} E_{1g} \\ \eta_g & \mu_g \end{vmatrix}$
$egin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccc} \nu_u & \zeta_u & 0 & 1 \\ \hline \xi_u & \zeta_u & 1 & 0 \end{array}$
27.122 $E_{1g} \times A_{2u}$	27.140 $E_{2u} \times A_{2g}$
$E_{1g} A_{2u} \mid \begin{array}{cc} E_{1u} \\ \eta_u & \mu_u \end{array}$	$E_{2u} A_{2g} \mid E_{2u} $
$\begin{array}{c ccccc} \hline \eta_g & \beta_u & 1 & 0 \\ \hline \mu_g & \beta_u & 0 & 1 \\ \hline \end{array}$	$\begin{array}{c cccc} \hline \nu_u & \beta_g & 0 & -1 \\ \hline \xi_u & \beta_g & 1 & 0 \\ \hline \end{array}$
27.123 $E_{1g} \times A_{1u}$	27.141 $E_{2u} \times E_{2g}$
E ₁₂ ,	$E_{2u} E_{2g} \begin{vmatrix} A_{2u} & A_{1u} & E_{2u} \\ \beta_u & \alpha_u & \nu_u & \xi_u \end{vmatrix}$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\mu_g \alpha_u \mid 1 0$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
27.124 $E_{1g} \times B_{1g}$ $ E_{2g} $	$27.142 E_{2u} imes E_{1u}$
$ \begin{array}{c cccc} E_{1g} & B_{1g} & E_{2g} \\ \hline \eta_g & \gamma_g & 0 & 1 \end{array} $	$\mid R_2 \mid R_1 \mid F_2$
$\mu_g \gamma_g \mid 1 0$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
27.125 $E_{1g} \times B_{2g}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c ccc} E_{1g} & B_{2g} & E_{2g} \ \hline \eta_g & \zeta_g & 1 & 0 \end{array}$	
$\frac{\eta_g \zeta_g \mid 1 0}{\mu_g \zeta_g \mid 0 -1}$	27.143 $E_{2u} \times E_{1g}$ $B_{2u} \mid B_{1u} \mid E_{1u}$
27.126 $E_{1g} \times B_{1u}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
E_{1g} B_{1u} $\begin{vmatrix} E_{2u} \\ \nu_u & \xi_u \end{vmatrix}$	$\nu_u \mu_g \mid \frac{\sqrt{2}}{2} \mid 0 \mid -\frac{\sqrt{2}}{2} 0$
$\begin{array}{c ccccc} \eta_g & \gamma_u & 1 & 0 \\ \hline \mu_g & \gamma_u & 0 & -1 \end{array}$	$\begin{array}{c c c} \xi_u & \eta_g & \frac{\sqrt{2}}{2} & 0 & \frac{\sqrt{2}}{2} & 0\\ \xi_u & \mu_g & 0 & \frac{\sqrt{2}}{2} & 0 & -\frac{\sqrt{2}}{2} \end{array}$
27.127 $E_{1g} \times B_{2u}$	27.144 $E_{2u} \times E_{2u}$
E_{1g} B_{2u} E_{2u} ν_u ξ_u	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c c c c} E_{1g} & B_{2u} & \lambda_u & \xi_u \\ \hline \eta_g & \zeta_u & 0 & 1 \\ \hline \mu_g & \zeta_u & 1 & 0 \\ \hline \end{array}$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\mid E_{1g} \mid$	28 Group T
$\begin{array}{c cccc} E_{1g} & A_{2g} & \eta_g & \mu_g \\ \hline \eta_g & \beta_g & 0 & -1 \end{array}$	$28.1 A \times A$
μ_g β_g 1 0	
27.129 $E_{1g} \times E_{2g}$ $ B_{2g} B_{1g} E_{1g}$	$\begin{array}{c c} A & A & \alpha \\ \hline \alpha & \alpha & 1 \end{array}$
E_{1g} E_{2g} ζ_g γ_g η_g μ_g	28.2 $A \times E^1$
η_g ξ_g 0 $\frac{\sqrt{2}}{2}$ $-\frac{\sqrt{2}}{2}$ 0	$A E^1 \mid \stackrel{E^1}{\beta}$
$\begin{array}{c c c c c} \hline \mu_g & \nu_g & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 0 \\ \mu_g & \xi_g & \frac{\sqrt{2}}{2} & 0 & 0 & \frac{\sqrt{2}}{2} \\ \hline \end{array}$	α β 1
27.130 $E_{1g} \times E_{1u}$	$28.3 A \times E^2$ $\mid E^2$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c cccc} A & E^2 & \gamma \\ \hline \alpha & \gamma & 1 \end{array} $
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$oldsymbol{28.4} A imes T$
$\begin{array}{c cccc} \mu_g & \eta_u & 0 & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 0 \\ \mu_g & \mu_u & \frac{\sqrt{2}}{2} & 0 & 0 & \frac{\sqrt{2}}{2} \end{array}$	$A T \mid egin{array}{cccc} T & & & & & & & & & & & & & & & & & & $
27.131 $E_{1a} \times E_{1a}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

 $\mu_u \quad \gamma_u \mid 0 \quad -1$

27.131 $E_{1g} \times E_{1g}$

28.6 $E^1 \times E^1$
$egin{array}{c c} E^1 & E^1 & F^2 \ \hline eta & eta & eta & 1 \ \hline \end{array}$
eta eta 1 $egin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c cc} E^1 & E^2 & A \\ \hline \beta & \gamma & 1 \end{array}$
28.8 $E^1 \times T$
E^1 T ζ η μ
$egin{array}{c c c c c c c c c c c c c c c c c c c $
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c cc} E^2 & A & E^2 \\ \hline \gamma & \alpha & 1 \end{array}$
28.10 $E^2 \times E^1$
$egin{array}{c c} E^2 & E^1 & A \ \hline \gamma & eta & 1 \ \hline \end{array}$
28.11 $E^2 \times E^2$
$\begin{array}{c cc} E^2 & E^2 & B^1 \\ \hline \gamma & \gamma & 1 \end{array}$
$28.12 E^2 \times T$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$ \begin{array}{c cccc} \gamma & \eta & 0 & -\frac{i(\sqrt{3}+i)}{2} & 0 \\ \gamma & \mu & 0 & 0 & \frac{i(\sqrt{3}+i)}{2} \end{array} $
$\textbf{28.13} T \times A$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
μ α \mid 0 0 1 28.14 $T \times E^1$
$T E^1 \mid T \qquad \qquad \mu$
ζ β \mid 1 0 0
$egin{array}{c c c c} \eta & eta & 0 & rac{i\left(\sqrt{3}+i ight)}{2} & 0 \\ \hline \mu & eta & 0 & 0 & -rac{i\left(\sqrt{3}-i ight)}{2} \end{array}$
28.15 $T \times E^2$
$egin{array}{c cccc} T & E^2 & T & & \mu & & & & & & & & & & & & & & &$
$\begin{array}{c ccccc} \zeta & \gamma & 1 & 0 & 0 \\ \hline \eta & \gamma & 0 & -\frac{i(\sqrt{3}-i)}{2} & 0 \end{array}$
$\mu \gamma 0 0 \frac{i(\sqrt{3}+i)}{2}$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$
T T β γ α ζ η μ
$egin{array}{c c c c c c c c c c c c c c c c c c c $
$ \begin{array}{c c c} \eta & \zeta & 0 \\ \eta & \eta & -\frac{\sqrt{3}}{6} + \frac{i}{2} \\ \eta & \mu & 0 \end{array} \right \begin{array}{c c} 0 & 0 & 1 \\ -\frac{\sqrt{3}}{6} - \frac{i}{2} & \frac{\sqrt{3}}{3} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{array} $
$\begin{array}{c c c c c c c c c c c c c c c c c c c $
29 Group T_h
29.1 $A_g \times A_g$ $A_g \begin{vmatrix} A_g \\ \alpha_g \end{vmatrix}$
$egin{array}{c c} A_g & A_g & lpha_g \ \hline lpha_g & lpha_g & 1 \ \hline \end{array}$
29.2 $A_g \times A_u$
$\begin{array}{c cccc} A_g & A_u & A_u \\ \hline \alpha_g & \alpha_u & 1 \end{array}$
$egin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c cc} A_g & E_u^1 & E_u^1 \\ \hline \alpha_g & \beta_u & 1 \end{array}$
29.4 $A_g \times E_u^2$
$ \begin{array}{c cc} A_g & E_u^2 & \gamma_u \\ \hline \alpha_g & \gamma_u & 1 \end{array} $
${f 29.5}$ $A_g imes E_g^2$
$ \frac{A_g E_g^2 \mid E_g^2}{\alpha_g \gamma_g \mid 1} $
$29.6 A_g \times E_g^1$ $\mid E_g^1$
$egin{array}{c c} A_g & E_g^1 & E_g^1 \ \hline lpha_g & eta_g & 1 \ \hline \end{array}$
29.7 $A_g \times T_g$
A_g T_g C
$egin{array}{c ccc} lpha_g & \zeta_g & 1 & 0 & 0 \ lpha_g & \eta_g & 0 & 1 & 0 \ lpha_g & \mu_g & 0 & 0 & 1 \ \end{array}$
29.8 $A_g \times T_u$
$A_g T_u igg egin{array}{cccc} T_u & & & & \ \zeta_u & \eta_u & \mu_u \end{array}$
$egin{array}{ c c c c c c c c c c c c c c c c c c c$

		$A_u \times A_u$	o .
	A_u	$ \begin{array}{c c} A_u \\ A_g & \alpha_u \end{array} $ $ \alpha_g & 1 $	
		$A_u \times$	
	A_u	$ \begin{array}{c c} A_u & A_g \\ A_u & \alpha_g \end{array} $	
		$\alpha_u \mid 1$ $A_u \times$	
		$ \begin{array}{c c} & E_g^1 \\ E_u^1 & \beta_g \end{array} $ $ \beta_u \mid 1 $	~
		$\beta_u \mid 1$ $A_u \times$	
		$ \begin{array}{c c} & E_g^2 \\ E_u^2 & \gamma_g \end{array} $ $ \begin{array}{c c} & \gamma_u & 1 \end{array} $	
		$\gamma_u \mid 1$ $A_u \times$	
		$ \begin{array}{c c} E_g^2 & \gamma_u \\ \hline \gamma_g & 1 \end{array} $	3
		$\gamma_g \mid 1$ $A_u \times$	
		$E_g^1 \mid \begin{array}{c} E_u^1 \\ \beta_u \end{array}$ $\beta_g \mid 1$	_
		$\beta_g \mid 1$ $A_u \times$	
			· ·
	$\begin{array}{ccc} \alpha_u & \zeta_g \\ \alpha_u & \eta_g \\ \alpha_u & \mu_g \end{array}$	$ \begin{vmatrix} T_u \\ \zeta_u & \eta_u \end{vmatrix} $ $ \begin{vmatrix} 0 & 1 \\ 0 & 0 \\ 1 & 0 \end{vmatrix} $	0 1 0
		$A_u \times$	
	A_u T_u	$ \begin{vmatrix} T_g \\ \zeta_g & \eta_g \end{vmatrix} $ $ \begin{vmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{vmatrix} $	$\frac{\mu_g}{1}$
	$\begin{array}{ccc} \alpha_u & \zeta_u \\ \alpha_u & \eta_u \\ \alpha_u & \mu_u \end{array}$	$ \begin{array}{c cccc} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{array} $	1 0 0
		$E_u^1 \times$	3
	$\frac{E_u^1}{\beta_u}$	$ \begin{array}{c c} & E_u^1 \\ A_g & \beta_u \end{array} $ $ \begin{array}{c c} \alpha_g & 1 \end{array} $	
		$E_u^1 \times$	
	$\frac{E_u^1}{\beta_u}$	$ \begin{array}{c c} & E_g^1 \\ A_u & \beta_g \end{array} $ $ \begin{array}{c c} \alpha_u & 1 \end{array} $	
		$E_u^1 \times$	u .
	$\frac{E_u^1}{\beta_u}$	$ \begin{array}{c c} E_u^1 & F_g^2 \\ E_u^1 & \gamma_g \end{array} $ $ \beta_u \mid 1 $	
		$E_u^1 \times$	
	$\frac{E_u^1}{\rho}$	$ \begin{array}{c c} E_u^2 & \alpha_g \\ \hline \gamma_u & 1 \end{array} $	
	, ω	$\gamma_u \mid 1$ $E_u^1 \times$	E_q^2
		$E_g^2 \mid A_u \\ \alpha_u \\ \gamma_g \mid 1$	
		$\gamma_g \mid 1$ $E_u^1 \times$	
		$ \begin{array}{c c} & E_u^2 \\ E_g^1 & \gamma_u \\ \hline \beta_g & 1 \end{array} $	3
		$\beta_g \mid 1$ $E_u^1 \times$	
E_u^1		a	3
β_u β_u	$egin{array}{ c c c c c c c c c c c c c c c c c c c$	$-\frac{i\left(\sqrt{3}-i\right)}{2}$	$ \frac{\mu_u}{0} $ $ \frac{i(\sqrt{3}+i)}{2} $ 0
eta_u		$E_u^1 imes$	
E_u^1	$T_u \mid T_g \ \zeta_g$	η_g	μ_g
β_u β_u	$ \begin{array}{c ccc} \zeta_u & 0 \\ \eta_u & 1 \\ \mu_u & 0 \end{array} $	$0\\0\\-\frac{i(\sqrt{3}-i)}{2}$	$ \frac{\mu_g}{\frac{i(\sqrt{3}+i)}{2}} $ 0
, &		$E_u^2 \times$	
	$\frac{E_u^2}{\gamma_u}$	$ \begin{array}{c c} & E_u^2 \\ A_g & \gamma_u \end{array} $ $ \alpha_g & 1 $	
		$E_u^2 \times$	
	E_u^2	$\begin{array}{c c} & E_g^2 \\ A_u & \gamma_g \end{array}$ $\begin{array}{c c} \alpha_u & 1 \end{array}$	
	,	$E_u^2 \times$	
	E_u^2	$ \begin{array}{c c} E_u^1 & A_g \\ \beta_u & \alpha_g \end{array} $	
		$E_u^2 \times$	
	а	$E_u^2 \mid E_g^1 \atop \beta_g$	
		$\gamma_u \mid 1$ $E_u^2 \times$	E_g^2
		$E_g^2 \mid \begin{array}{c} E_u^1 \\ \beta_u \end{array}$ $\gamma_g \mid 1$	0
		$\gamma_g \mid 1$ $E_u^2 \times$	
		$ \begin{array}{c c} E_g^1 & A_u \\ \beta_g & \alpha_u \end{array} $	3
	γ_u	β_g 1	

| | 20 31

 | $E_u^2 \times$ | T | | |
 | 20 | 51
 | | $T_q \times$ | E^1
 | | | |
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--|---|---|--|--
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--	---
--	--
E_n^2	

 | $D_u \wedge \eta_u$ | o . | | | T
 | E_u^1 |
 | | U | α.
 | | | |
| γ_u γ_u | $\begin{array}{c c} \zeta_g & 0 \\ \eta_g & 0 \end{array}$

 | $ \frac{i(\sqrt{3}+i)}{2} $ 0 0 | $0\\ -\frac{i(\sqrt{3}-i)}{2}$ | | | ζ_g
 | β_u | 0
 | $-\frac{i}{}$ | $\frac{\left(\sqrt{3}-i\right)}{2}$ |
 | 0 | _ | |
| γ_u |

 | 0 $E_u^2 \times$ | | | |
 | β_u β_u |
 | | 0 | <u>i(</u>
 | $\frac{\sqrt{3}+i)}{2}$ | — | |
| $E_{\cdot \cdot \cdot}^2$ |

 | | | | |
 | 29 | 0.52
 | } | $T_g \times$ | E_u^2
 | | | |
| $\gamma_u \\ \gamma_u$ | $\begin{array}{c c} \zeta_u & 0 \\ \eta_u & 1 \end{array}$

 | 0 0 | $ \frac{\mu_g}{-\frac{i(\sqrt{3}-i)}{2}} $ 0 | | | T_g
 | E_u^2 | T_u ζ_u
 | <i>i</i> (\ | $\frac{\eta_u}{\sqrt{3}+i)}$ | μ
 | ι_u | | |
| γ_u |

 | | | | | η_g
 | γ_u γ_u | 0
 | | 0 | $-\frac{i(\cdot)}{\cdot}$
 | $\sqrt{3}-i$) | <u> </u> | |
| |

 | $E_g^2 \times $ $ E_g^2 \times $ | | | | μ_g
 | γ_u | 1
 | | 0 |
 | 0 | | |
| |

 | $ \begin{array}{c c} & E_g^2 \\ A_g & \gamma_g \\ \hline \alpha_g & 1 \end{array} $ | | | | T.
 | |
 | | $T_g \times$ | J
 | | | |
| |

 | $E_g^2 \times A_u \begin{vmatrix} E_u^2 \\ \gamma_u \end{vmatrix}$ | A_u | | | $\frac{T_g}{\zeta_g}$
 | γ_g γ_g | $\begin{array}{ c c c c c c c c c c c c c c c c c c c$
 | <i>i</i> (2, | $\frac{\eta_g}{0}$ |
 | $\frac{\iota_g}{0}$ | _ | |
| |

 | $\begin{array}{c c} A_u & \gamma_u \\ \hline \alpha_u & 1 \end{array}$ | - | | |
 | γ_g | i
 | | 0 |
 | $\frac{0}{\sqrt{3}-i)}$ | | |
| |

 | $E_g^2 \times$ | | | |
 | 29 | 0.54
 | : | $T_g \times$ | E_g^1
 | | | |
| | $\frac{E_g^2}{\gamma_g}$

 | $ \begin{array}{c c} E_u^1 & A_u \\ \alpha_u & \alpha_u \end{array} $ $ \beta_u & 1 $ | - | | | T_g
 | β_g | T_g ζ_g
 | | η_g |
 | μ_g | | |
| |

 | $E_g^2 \times$ | | | | $\frac{\zeta_g}{\eta_g}$
 | β_g β_g | 0
 | $-\frac{i}{}$ | $\frac{0}{\left(\sqrt{3}-i\right)}$ |
 | 0 | _ | |
| | E_g^2

 | $ \begin{array}{c c} E_u^2 & E_u^1 \\ F_u & \beta_u \end{array} $ | - | | | μ_g
 | eta_g | 0
 | | 0 | $i(\cdot$
 | $\frac{\sqrt{3}+i}{2}$ | | |
| |

 | $\gamma_u \mid 1$ $E_g^2 \times$ | | | | I
 | |
 | | $T_g \times E^1$ |
 | $\mid T_a \mid$ | | |
| |

 | $ \begin{array}{c c} g \\ E_g^1 & E_g^1 \\ \hline \gamma_g & 1 \end{array} $ | · | | $\frac{T_g}{\zeta_g}$ | T_g ζ_g
 | $E_g^2 \\ \gamma_g \\ -\frac{\sqrt{3}}{6} -$ | $\frac{i}{2}$
 | $\begin{vmatrix} \alpha_g \\ \frac{\sqrt{3}}{3} \end{vmatrix}$ | $\frac{\beta_g}{\beta_g}$ | $+\frac{i}{2}$
 | $\begin{bmatrix} \zeta_g \\ \zeta_g \end{bmatrix}$ | 0 | $\frac{\mu_g}{0}$ |
| |

 | | | | $\frac{\zeta_g}{\zeta_g} \frac{\zeta_g}{\zeta_g}$ | $\left \begin{array}{c} \eta_g \\ \mu_g \end{array} \right $
 | $ \begin{array}{c} -\frac{\sqrt{3}}{6} \\ 0 \\ 0 \end{array} $ |
 | $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$ | $\begin{array}{c} 0 \\ 0 \\ \hline 0 \end{array}$ |
 | 0 0 | 1 | 0 0 1 |
| |

 | $E_g^2 \times $ | · · | | $\eta_g \ \eta_g$ | $\left \begin{array}{c c} \eta_g \\ \mu_g \end{array} \right $
 | $-\frac{0}{\frac{\sqrt{3}}{6}} + \frac{0}{0}$ |
 | | |
 | | 0 0 | |
| | $\frac{E_g}{\gamma_g}$

 | $ \begin{array}{c c} E_g^1 & \alpha_g \\ \beta_g & 1 \end{array} $ | - | | μ_g | $\left. egin{array}{c} \zeta_g \ \eta_g \ \mu_g \end{array} \right $
 | $0\\ \frac{\sqrt{3}}{3}$ |
 | $\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$ | $0 \\ \frac{\sqrt{3}}{3}$ | <u>3</u>
 | $\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$ | 0 0 | 0 0 |
| |

 | $E_g^2 \times$ | T_g | | |
 | 29 | 9.56
 | ; | $T_g \times$ | T_u
 | | | |
| γ_g | $\zeta_g \mid 1$

 | $\frac{\eta_g}{0}$ | $\frac{\mu_g}{0}$ | | T_g |
 | | -
 | $A_u \mid \alpha_u \mid$ | E_u^1 β_u | i.
 | T_u ζ_u | | |
| | $ \eta_g \mid 0 $ $ \mu_g \mid 0 $

 | $\frac{i(\sqrt{3}+i)}{2}$ | $-\frac{0}{\frac{i\left(\sqrt{3}-i\right)}{2}}$ | | $\zeta_g \ \zeta_g \ \zeta_g$ | $\left. egin{array}{c c} \eta_u & - \ \mu_u & \end{array} \right $
 | $ \begin{array}{c} 0 \\ -\frac{\sqrt{3}}{6} \\ 0 \end{array} $ | $\frac{i}{2}$
 | | $-\frac{\sqrt{3}}{6}$ | $+\frac{i}{2}$
 | 0 | | 1
0
0 |
| |

 | $E_g^2 \times$ | | | | $ \begin{array}{c c} \zeta_u \\ \eta_u \\ \mu_u \end{array} $
 | $0 \\ 0 \\ -\frac{\sqrt{3}}{6} +$ | $\frac{i}{2}$
 | $\begin{array}{c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$ | $0\\ -\frac{\sqrt{3}}{6}$ | $-\frac{i}{2}$
 | 0
1
0 | 0
0
0 | 0
0
0 |
| $\frac{E_g^2}{\gamma_g}$ | $ \begin{array}{c c} T_u & \zeta_u \\ \hline \zeta_u & 1 \end{array} $

 | $ \frac{\eta_u}{0} \frac{1(\sqrt{3}+i)}{2} $ | $\frac{\mu_u}{0}$ | | μ_g μ_g | $\begin{cases} \zeta_u \\ \eta_u \end{cases}$
 | $\begin{array}{c} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{array}$ |
 | $\begin{bmatrix} \sqrt{3} \\ 3 \\ 0 \\ 0 \end{bmatrix}$ | $\begin{array}{c} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{array}$ | <u> </u>
 | 0
0
0 | 0
0
1 | 0 0 |
| γ_g | $\eta_u = 0$

 | $\frac{i(\sqrt{3+i})}{2}$ | 0 | | μg | μu
 | O | ı
 | U | U |
 | O | - | O |
| γ_g | $\mu_u \mid 0$

 | 0 | $-\frac{i\left(\sqrt{3}-i\right)}{2}$ | | |
 | 29 | .57
 | | | A_{a}
 | | | |
| γ_g | 29.41

 | $E_g^1 \times$ | A_g | | |
 | |
 | • | $T_u \times$ | ·
 | | | |
| γ_g | 29.41

 | $E_g^1 \times$ | A_g | | |
 | $\frac{T_u}{\zeta_u}$ | $\frac{A_g}{\alpha_g}$
 | $egin{array}{ c c c c c c c c c c c c c c c c c c c$ | $T_u \times \frac{1}{2}$ | μ_u 0 0
 | - | | |
| γ_g | $egin{array}{c} {f 29.41} \\ {ar{eta_g}} \\ {f 3g} \end{array}$

 | $E_g^1 \times \\ A_g \mid_{\beta_g}^{E_g^1} \\ \alpha_g \mid_1$ $E_g^1 \times \\$ | A_g A_u | | |
 | $\frac{T_u}{\zeta_u}$ $\frac{\eta_u}{\mu_u}$ | $\begin{array}{c} A_g \\ \hline \alpha_g \\ \hline \alpha_g \\ \hline \alpha_g \end{array}$
 | $egin{array}{ c c c c c c c c c c c c c c c c c c c$ | $T_u \times \frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ | $\begin{array}{c} \mu_u \\ 0 \\ 0 \\ \end{array}$
 | -
- | | |
| γ_g | $egin{array}{c} {f 29.41} \\ {ar{eta_g}} \\ {f 3g} \end{array}$

 | $E_g^1 \times \\ A_g \mid_{\beta_g}^{E_g^1} \\ \alpha_g \mid_1$ $E_g^1 \times \\$ | A_g A_u | | |
 | $rac{ \zeta_u}{\zeta_u} \ rac{ \zeta_u}{\mu_u} \ rac{ 29}{}$ | $A_g \over lpha_g \over lpha_g \over lpha_g$
 | $egin{array}{ c c c c c c c c c c c c c c c c c c c$ | $T_u \times \frac{1}{2} \frac{\eta_u}{0} \times \frac{\eta_u}{0} \times \frac{\eta_u}{0} \times T_u \times \frac{1}{2} \frac{\eta_u}{0} \times $ | $egin{array}{c} \mu_u \\ \hline 0 \\ \hline 0 \\ \hline 1 \\ A_u \end{array}$ | -
-
-
 | | |
| γ_g | $egin{array}{c} {m{29.41}} \ & rac{E_g^1}{eta_g} \ & {m{29.42}} \ & rac{E_g^1}{eta_g} \ & eta_g \end{array}$

 | $E_g^1 \times A_g \begin{vmatrix} E_g^1 \\ \beta_g \end{vmatrix}$ $\alpha_g \mid 1$ | A_g | | |
 | $rac{ \zeta_u}{\zeta_u} \ rac{ \zeta_u}{\mu_u} \ rac{ 29}{}$ | $A_g \over lpha_g \over lpha_g \over lpha_g$
 | $egin{array}{ c c c c c c c c c c c c c c c c c c c$ | $T_u \times \frac{1}{2} \frac{\eta_u}{0} \times \frac{\eta_u}{0} \times \frac{\eta_u}{0} \times T_u \times \frac{1}{2} \frac{\eta_u}{0} \times $ | $egin{array}{c} \mu_u \\ \hline 0 \\ \hline 0 \\ \hline 1 \\ A_u \end{array}$ | -
-
-
 | | |
| γ_g | $egin{array}{c} {\bf 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ \end{array}$

 | $E_g^1 \times \\ A_g \begin{vmatrix} E_g^1 \\ \beta_g \end{vmatrix}$ $\alpha_g \mid 1$ $E_g^1 \times \\ A_u \begin{vmatrix} E_u^1 \\ \beta_u \end{vmatrix}$ $\alpha_u \mid 1$ $E_g^1 \times $ | A_g A_u E_u^1 | | |
 | $egin{array}{c} T_u \ \hline \zeta_u \ \hline \eta_u \ \hline \end{array}$ | A_g α_g α_g α_g α_g α_g α_g α_u α_u
 | $egin{array}{c c} T_{ij} & T$ | $T_u \times \frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ | $ \begin{array}{c} \mu_u \\ 0 \\ 0 \end{array} $ $ \begin{array}{c} 1 \\ \mu_g \\ 1 \\ 0 \end{array} $
 | -
-
- | | | | | | | | | | | | | | |
| γ_g | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & rac{E_g^1}{eta_g} \\ \hline eta_g \end{array}$ | $E_g^1 \times E_g^1 \times A_g \begin{vmatrix} E_g^1 \\ \beta_g \end{vmatrix}$ $\alpha_g \mid 1$ $E_g^1 \times A_u \begin{vmatrix} E_u^1 \\ \beta_u \end{vmatrix}$ $\alpha_u \mid 1$ $E_g^1 \times E_u^1 \mid C_u^2 \mid C_u^$ | A_g | | | | $egin{array}{c} T_u \ \hline \zeta_u \ \hline \eta_u \ \hline \end{array}$ | A_g α_g α_g α_g α_g α_u α_u α_u | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta_{ij} \\ \hline & \zeta_{ij} & \zeta_{ij}$ | $T_u \times \frac{1}{2} \frac{\eta_u}{u} \frac{\eta_u}{u} \frac{\eta_u}{u} \frac{\eta_u}{u} \times \frac{1}{2} $ | $ \begin{array}{c} \mu_u \\ 0 \\ 0 \end{array} $ $ \begin{array}{c} A_u \\ \mu_g \\ 1 \\ 0 \\ 0 \end{array} $ | -
-
- | | |
| γ_g | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & rac{E_g^1}{eta_g} \\ {f 29.44} \\ & egin{array}{c} {f 29.44} \\ & {f 29.44} $ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \mid \beta_{u}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \mid \gamma_{u}$ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{1} \times \\ A_{u} \mid 1$ | A_g | | | | $egin{array}{c} rac{T_u}{\zeta_u} & & & & & & & & & & & & & & & & & & &$ | $egin{array}{c} A_g \ \hline lpha_g \ \hline lpha_g \ \hline lpha_g \ \hline lpha_g \ \hline lpha_u \ \hline lpha_u \ \hline lpha_u \ \hline lpha_u \ \hline lpha_g \ \hline lpha_g \ \hline lpha_g \ \hline lpha_u \ \hline \alpha_u \ \hline lpha_u \ \hline \alpha_u \ \hline \alh$ | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta_{ij} \\ \hline & 1 & 0 \\ \hline & 0 & 0 \\ \hline & 0 & \zeta_{ij} \\ \hline & 0 & \zeta_{ij} \\ \hline & 0 & 0 \\ \hline & 0 & 0$ | $T_u \times \frac{1}{u} \frac{\eta_u}{\eta_u} \frac{\eta_u}{0}$ $T_u \times \frac{1}{u} \frac{\eta_g}{0} \frac{\eta_g}{0}$ $T_u \times \frac{1}{u} \frac{\eta_g}{0}$ $T_u \times \frac{\eta_g}{0}$ | $ \frac{\mu_u}{0} $ $ \frac{0}{1} $ $ A_u $ $ \frac{\mu_g}{0} $ $ 0 $ $ E_u^1 $ | μ_g | _ | |
| γ_g | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & rac{E_g^1}{eta_g} \\ {f 29.44} \\ & rac{E_g^1}{eta_g} \\ & eta_g \end{array}$

 | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{2} \begin{vmatrix} A_{u} \\ \alpha_{u} \end{vmatrix}$ $\gamma_{u} \mid 1$ | A_g A_u E_u^1 | | | $\frac{\zeta_u}{\eta_u}$
 | $egin{array}{c} T_u \ \hline \zeta_u \ \hline \eta_u \ \hline \end{array}$ | $egin{array}{c} A_g \ lpha_g \ lpha_g \ egin{array}{c} lpha_g \ lpha_u \ eta_u \ eta_u \ eta_u \ eta_g \ eta$ | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta_{ij} \\ \hline & 1 & 0 \\ \hline & 0 & 0 \\ \hline & 1 & \zeta_{ij} & \zeta_{ij} \\ \hline & 0 & 0 \\ \hline & 0$
 | $T_u 	imes $ | $egin{array}{c} \mu_u & 0 & \\ 0 & 0 & \\ 1 & A_u & \\ \mu_g & 1 & \\ 0 & 0 & \\ \hline & \underline{i(\underline{\cdot})} & \\ \hline \end{array}$ | $\frac{\mu_g}{\sqrt{3}+i)}$
 | | |
| γ_g | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & rac{E_g^1}{eta_g} \\ {f 29.44} \\ & rac{E_g^1}{eta_g} \\ {f 29.45} \\ \end{array}$ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{2} \begin{vmatrix} A_{u} \\ \alpha_{u} \end{vmatrix}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times \\ \gamma_{u} \mid 1$ | A_g A_u E_u^1 E_u^2 E_g^2 | | | $\frac{\zeta_u}{\eta_u}$ | $egin{array}{c} T_u \ \hline \gamma_u \ \hline \mu_u \ \hline \end{array}$ | $egin{array}{c} A_g \ \hline lpha_g \ \hline lpha_g \ \hline lpha_g \ \hline lpha_u \ \hline \alpha_u \ \hline lpha_u \ \hline \alpha_u \ \hline \alpha_u \ \hline \$ | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta_{ij} \\ \hline & \zeta_{ij} & \zeta_{ij} \\ \hline & 0 \\ \hline & 0 \\ \hline & 1 \\ \hline & \zeta_{ij} & \zeta_{ij} \\ \hline & 1 \\ \hline &$ | $T_{u} \times \frac{1}{2} \frac{\eta_{u}}{u} \frac{\eta_{u}}{\eta_{u}} \frac{\eta_{u}}{u} \times \frac{1}{2} \frac{1}{u} \times \frac{1}{2} \frac{\eta_{g}}{u} \frac{\eta_{g}}{u} \times \frac{\eta_{g}}{u} \frac{1}{u} \times \frac{\eta_{g}}{u} \times \frac{\eta_{g}}{u} \frac{1}{u} \times \frac{\eta_{g}}{u} \times \frac{\eta_{g}}{u} \frac{1}{u} \frac{1}{u} \times \frac{\eta_{g}}{u} \frac{1}{u} \frac{1}{u} \times \frac{\eta_{g}}{u} \frac{1}{u} \frac{1}{u} \frac{1}{u} \times \frac{\eta_{g}}{u} \frac{1}{u} $ | $\frac{\mu_u}{0}$ $\frac{0}{0}$ 1 A_u $\frac{\mu_g}{0}$ 0 E_u^{1} | $\frac{\mu_g}{\sqrt{3}+i)} = 0$ | | |
| γ_g | $egin{array}{c} {f 29.41} \\ & E_g^1 \\ & eta_g \\ {f 29.42} \\ & {f 29.43} \\ & {f 29.43} \\ & {f 29.44} \\ & {f E}_g^1 \\ & {f eta}_g \\ & {f 29.45} \\ & {f E}_g^1 \\ & {f eta}_g \\ & {f 29.45} \\ & {f E}_g^1 \\ & {f eta}_g \\ & {f B}_g \end{array}$

 | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \mid \beta_{u}$ $\alpha_{u} \mid 1$ $E_{u}^{1} \mid \gamma_{u}$ $\beta_{u} \mid 1$ $E_{u}^{2} \mid \alpha_{u}$ $\gamma_{u} \mid 1$ $E_{u}^{2} \mid \alpha_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{2} \times \\ E_{u}^{2} \mid \alpha_{g}$ $\gamma_{g} \mid 1$ | A_g A_u E_u^1 E_u^2 E_g^2 | | | $\frac{\zeta_u}{\eta_u}$
 | $egin{array}{c} T_u \ \hline \zeta_u \ \hline \eta_u \ \hline \end{array}$ | $egin{array}{c} A_g \ \hline lpha_g \ \hline \ \ $ | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta_{ij} \\ \hline & \zeta_{ij} & \zeta_{ij} \\ \hline & 0 & \zeta_{ij} \\ \hline & 0$ | $T_{u} \times \frac{1}{2} \frac{\eta_{u}}{0}$ $T_{u} \times \frac{1}{2} \frac{\eta_{u}}{0}$ $T_{u}
\times \frac{\eta_{g}}{0}$ $T_{u} \times \frac{\eta_{g}}{0}$ $T_{u} \times \frac{\eta_{g}}{0}$ $T_{u} \times T_{u} \times T_{u}$ | $\frac{\mu_u}{0}$ $\frac{0}{0}$ 1 A_u $\frac{\mu_g}{0}$ 0 E_u^{1} $\frac{i(\underline{t})}{t}$ | $\frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{2}$
 | | |
| γ_g | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & f 29.44 \\ & rac{E_g^1}{eta_g} \\ {f 29.45} \\ & rac{E_g^1}{eta_g} \\ {f 29.46} \\ & f 29.46 \\ \hline \end{array}$

 | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix} $ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} A_{u} \\ \gamma_{u} \end{vmatrix} $ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{2} \begin{vmatrix} A_{u} \\ \alpha_{u} \end{vmatrix} $ $\gamma_{u} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times $ | A_g A_u E_u^1 E_g^2 E_g^1 | | | $\frac{\zeta_u}{\eta_u}$ μ_u ζ_u
 | $egin{array}{c} T_u \ \hline \gamma_u \ \hline \gamma_u \ \hline \end{array}$ | $egin{array}{c} A_g \ lpha_g \ lpha_g \ lpha_g \ egin{array}{c} lpha_g \ lpha_u \ lpha_u \ egin{array}{c} lpha_u \ lpha_u \ egin{array}{c} lpha_g \ egin{array}{c} \zeta_g \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$
 | $egin{array}{c c} T_{ij} & \zeta_{ij} \\ \hline & \zeta_{ij} \\ \hline & 0 \\ \hline & 0 \\ \hline & \zeta_{ij} \\ \hline & \zeta_{ij} \\ \hline & \zeta_{ij} \\ \hline & -\frac{i}{2} \\ \hline \end{array}$ | $T_{u} \times \frac{1}{2} \frac{\eta_{u}}{0}$ $T_{u} \times \frac{1}{2} \frac{\eta_{u}}{0}$ $T_{u} \times \frac{\eta_{g}}{0}$ | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{0}{1}$ A_{u} $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{i(\cdot)}{0}$ E_{u}^{1}
 | $\frac{\mu_g}{\sqrt{3}+i}$ $\frac{2}{0}$ 0 $\frac{\iota_g}{\sqrt{3}-i}$ | | | | | | | | | | | | | | |
| γ_g | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & f 29.44 \\ & rac{E_g^1}{eta_g} \\ {f 29.45} \\ & rac{E_g^1}{eta_g} \\ {f 29.46} \\ & f 29.46 \\ \hline \end{array}$ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \mid \beta_{u}$ $\alpha_{u} \mid 1$ $E_{u}^{1} \mid \gamma_{u}$ $\beta_{u} \mid 1$ $E_{u}^{2} \mid \alpha_{u}$ $\gamma_{u} \mid 1$ $E_{u}^{2} \mid \alpha_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{2} \times \\ E_{u}^{2} \mid \alpha_{g}$ $\gamma_{g} \mid 1$ | A_g A_u E_u^1 E_g^2 E_g^1 | | | $ \begin{array}{c} \zeta_u \\ \eta_u \\ \mu_u \end{array} $ $ \begin{array}{c} T_u \\ \zeta_u \\ \eta_u \end{array} $ | $egin{array}{c} T_u \ \hline \zeta_u \ \hline \eta_u \ \hline \mu_u \ \hline \end{array}$ | $egin{array}{c} A_g \ lpha_g \ lpha_g \ lpha_g \ lpha_g \ egin{array}{c} lpha_g \ lpha_u \ lpha_u \ egin{array}{c} lpha_u \ lpha_u \ egin{array}{c} a_u \ lpha_u \ egin{array}{c} a_u $ | $egin{array}{c c} T & \zeta_0 & \zeta_0 \\ \hline & 1 & 0 \\ \hline & 0 & 0 \\ \hline & & \zeta_0 \\ \hline & & $ | $T_u 	imes $ T_u | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ 1 A_{u} $\frac{\mu_{g}}{1}$ 0 0 $\underline{i(}$ E_{u}^{2} | $\frac{\mu_g}{\sqrt{3}+i)} = 0$ 0 | | |
| | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & f 29.44 \\ & rac{E_g^1}{eta_g} \\ {f 29.45} \\ & f 29.45 \\ & rac{E_g^1}{eta_g} \\ {f 29.46} \\ & rac{E_g^1}{eta_g} \\ {f 29.47} \\ & f 29.47 \\ \hline \end{array}$ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix} $ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} A_{u} \\ \gamma_{u} \end{vmatrix} $ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ | A_g A_u E_u^1 E_g^2 E_g^1 E_g^1 E_g^2 | | | $ \begin{array}{c c} \zeta_u \\ \eta_u \\ \mu_u \end{array} $ $ \begin{array}{c c} T_u \\ \zeta_u \\ \eta_u \end{array} $ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\$ | $\begin{array}{c c} & T_{i} \\ \hline & \zeta_{i} \\ \hline & 1 \\ \hline & 0 \\ \hline & 0 \\ \hline & 0 \\ \hline & 1 \\ \hline & 0 \\ \hline \\ \hline & 0 \\ \hline & 0 \\ \hline \\$ | $T_u 	imes $ $\frac{d}{du} = \frac{\eta_u}{\eta_u}$ $\frac{du}{du} = \frac{\eta_u}{0}$ $\frac{du}{du} = \frac{\eta_u}{0}$ $\frac{du}{du} = \frac{\eta_g}{0}$ $\frac{du}{du} = $ | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{1}{1}$ A_{u} $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{i(\underline{\cdot})}{0}$ E_{u}^{1} E_{g}^{2} | $\frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{0}$ 0 0 0 0 | | |
| | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & f 29.44 \\ & rac{E_g^1}{eta_g} \\ {f 29.45} \\ & f 29.45 \\ & rac{E_g^1}{eta_g} \\ {f 29.46} \\ & rac{E_g^1}{eta_g} \\ {f 29.47} \\ & f 29.47 \\ \hline \end{array}$ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix} $ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} A_{u} \\ \gamma_{u} \end{vmatrix} $ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ | A_g A_u E_u^1 E_g^2 E_g^1 E_g^1 E_g^2 | | | $ \begin{array}{c c} \zeta_u \\ \eta_u \\ \mu_u \end{array} $ $ \begin{array}{c c} T_u \\ \zeta_u \\ \eta_u \end{array} $ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\$ | $\begin{array}{c c} & T_{i} \\ \hline & \zeta_{i} \\ \hline & 1 \\ \hline & 0 \\ \hline & 0 \\ \hline & 0 \\ \hline & 1 \\ \hline & 0 \\ \hline \\ \hline & 0 \\ \hline & 0 \\ \hline \\$ | $T_u 	imes $ $\frac{d}{du} = \frac{\eta_u}{\eta_u}$ $\frac{du}{du} = \frac{\eta_u}{0}$ $\frac{du}{du} = \frac{\eta_u}{0}$ $\frac{du}{du} = \frac{\eta_g}{0}$ $\frac{du}{du} = $ | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{1}{1}$ A_{u} $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{i(\underline{\cdot})}{0}$ E_{u}^{1} E_{g}^{2} | $ \frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{2} $ $ \frac{u_g}{\sqrt{3}-i)} = \frac{1}{2} $ $ 0 $ $ 0$ | | |
| | $egin{array}{c} {f 29.41} \\ & rac{E_g^1}{eta_g} \\ {f 29.42} \\ & rac{E_g^1}{eta_g} \\ {f 29.43} \\ & f 29.44 \\ & rac{E_g^1}{eta_g} \\ {f 29.45} \\ & f 29.45 \\ & rac{E_g^1}{eta_g} \\ {f 29.46} \\ & rac{E_g^1}{eta_g} \\ {f 29.47} \\ & f 29.47 \\ \hline \end{array}$ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix} $ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} A_{u} \\ \gamma_{u} \end{vmatrix} $ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ | A_g A_u E_u^1 E_g^2 E_g^1 E_g^1 E_g^2 | | | $ \begin{array}{c c} \zeta_u \\ \eta_u \\ \hline \mu_u \\ \hline \zeta_u \\ \eta_u \\ \hline \zeta_u \\ \zeta_u \\ \hline \zeta_u \\ \zeta_$ | $egin{array}{c} T_u & \hline \zeta_u & \hline \eta_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \alpha_g \\ \alpha_g \\ \alpha_g \\ A_u \\ \alpha_u \\ \alpha_u \\ A_u \\ $ | $\frac{1}{\zeta_{i}}$ | $T_u 	imes $ $\frac{f_u}{u} = \frac{\eta_u}{\eta_u}$ $\frac{f_u}{u} = \frac{\eta_u}{0}$ | $\frac{\mu_{u}}{0}$ 0 1 A_{u} $\frac{\mu_{g}}{0}$ 0 E_{u}^{1} E_{u}^{2} E_{g}^{2} | $ \frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{0} $ $ \frac{u_g}{\sqrt{3}-i} = \frac{1}{0} $ $ 0$ $ \frac{u_u}{0} $ | _ | |
| $\frac{E_g^1}{\beta_g}$ β_g β_g β_g | $egin{array}{c ccccccccccccccccccccccccccccccccccc$ | $E_{g}^{1} \times \\ A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix} $ $\alpha_{g} \mid 1$ $E_{g}^{1} \times \\ A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix} $ $\alpha_{u} \mid 1$ $E_{g}^{1} \times \\ E_{u}^{1} \begin{vmatrix} A_{u} \\ \gamma_{u} \end{vmatrix} $ $\beta_{u} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix} $ $\gamma_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ $E_{g}^{1} \times \\ E_{g}^{2} \mid \gamma_{g} $ $\beta_{g} \mid 1$ | A_g A_u E_u^1 E_g^2 E_g^2 E_g^1 E_g^1 E_g^2 | | | $ \begin{array}{c c} \zeta_u \\ \eta_u \\ \hline \mu_u \\ \hline \zeta_u \\ \eta_u \\ \hline \zeta_u \\ \zeta_u \\ \hline \zeta_u \\ \zeta_$ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\ \hline lpha_u \\ \hline \alpha_u \\ \hline $ | $\left \begin{array}{c c} T_{i} \\ \zeta_{i} \\ \hline \end{array}\right \left \begin{array}{c c} T_{i} \\ \zeta_{i} \\ \hline \end{array}\right \left \begin{array}{c c} T_{i} \\ \hline \end{array}$ | $T_u 	imes $ $\frac{1}{2} \frac{\eta_u}{0}$ $\frac{\eta_u}{0}$ $\frac{1}{2} \frac{1}{0} \frac{1}{0}$ $\frac{1}{2} \frac{1}{2} \frac{1}{0}$ | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{1}{1}$ A_{u} $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{i(\cdot)}{0}$ E_{u}^{1} E_{g}^{2} $\frac{\mu_{g}}{0}$ $\frac{i(\cdot)}{0}$ | $\frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{2}$ 0 0 $\frac{u_g}{\sqrt{3}-i}$ 0 0 $\frac{u_u}{\sqrt{3}-i}$ | _ | |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | $egin{array}{c ccccccccccccccccccccccccccccccccccc$ | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid A_{u} $ $\beta_{u} \mid 1$ $E_{u}^{2} \mid A_{u} $ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{u} $ $F_{g}^{2} \mid A_{g} $ $\gamma_{g} \mid 1$ $F_{g}^{1} \times A_{g} $ $F_{g}^{2} \mid A_{g} $ | A_g A_u A_u E_u^1 E_u^2 E_g^2 T_g μ_g 0 0 0 0 0 0 0 0 0 0 | | | $ \begin{array}{c c} \zeta_u \\ \eta_u \\ \hline \mu_u \\ \hline \zeta_u \\ \eta_u \\ \hline \mu_u \\ \hline \zeta_u \\ \eta_u \\ \hline \mu_u \end{array} $ | $egin{array}{c} T_u \ \hline \gamma_u \ \hline \mu_u \ \hline \end{array}$ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\$ | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta$ | $T_u 	imes $ T_u | $ \frac{\mu_{u}}{0} $ $ \frac{0}{0} $ $ 1 $ $ A_{u} $ $ \frac{\mu_{g}}{1} $ $ 0 $ $ 0 $ $ E_{u}^{1} $ $ \frac{i(\cdot)}{1} $ $ E_{g}^{2} $ $ E_{g}^{2} $ | $\frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{0} = \frac{1}{0$ | _ | |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | $egin{array}{c ccccccccccccccccccccccccccccccccccc$ | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{g}^{1} \times A_{u} \alpha_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{g} \alpha_{g}$ $\gamma_{g} \mid 1$ $E_{g}^{1} \times A_{g} \alpha_{g}$ $\beta_{g} \mid 1$ | A_g A_u A_u E_u^1 E_u^2 E_g^2 T_g μ_g 0 0 0 0 0 0 0 0 0 0 | | | $\begin{array}{c} \zeta_u \\ \eta_u \\ \mu_u \end{array}$ $\begin{array}{c} T_u \\ \zeta_u \\ \eta_u \\ \end{array}$ $\begin{array}{c} T_u \\ \zeta_u \\ \end{array}$ $\begin{array}{c} T_u \\ \zeta_u \\ \end{array}$ $\begin{array}{c} T_u \\ \zeta_u \\ \end{array}$ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline \alpha_g \\ \hline 0.58 \\ A_u \\ \hline \alpha_u \\ \hline \alpha_u \\ \hline \alpha_u \\ \hline 0.59 \\ \hline 0 \\ 0 \\$ | $\left \begin{array}{c c} T \\ \zeta_{i} \\ \hline \end{array}\right \left \begin{array}{c c} T \\ \zeta_{i} \\ \hline \end{array}\right \left \begin{array}{c c} T \\ \hline \end{array}\right \left \begin{array}{c c} C \\ \hline \end{array}$ | $T_u 	imes $ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{\eta_u}{\eta_u}$ $\frac{\eta_u}{\eta_u}$ $\frac{\eta_u}{\eta_u}$ $\frac{\eta_u}{\eta_u}$ | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{1}{1}$ A_{u} $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{i(\cdot)}{0}$ E_{u}^{1} E_{g}^{2} E_{g}^{2} | $ \frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{0} $ $ \frac{u_g}{\sqrt{3}-i} = \frac{1}{0} $ $ \frac{u_u}{\sqrt{3}-i} = \frac{1}{0} $ $ \frac{\mu_u}{\sqrt{3}-i} = \frac{1}{0} $ | _ | |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | $egin{array}{c c c c c c c c c c c c c c c c c c c $ | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{u}^{1} \mid \gamma_{u}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid \gamma_{u}$ $\beta_{u} \mid 1$ $E_{u}^{2} \mid \alpha_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{u}$ $E_{g}^{2} \mid \alpha_{g}$ $\gamma_{g} \mid 1$ $E_{g}^{1} \times A_{g}$ $\beta_{g} \mid $ | A_g A_g A_u A_u E_u^1 E_u^2 E_g^2 T_g μ_g 0 0 $i(\sqrt{3}+i)$ 2 T_u μ_u 0 0 $i(\sqrt{3}+i)$ 2 | | | $\begin{array}{c} \zeta_{u} \\ \eta_{u} \\ \\ \zeta_{u} \\ \\ \eta_{u} \\ \\ \\ \Gamma_{u} \\ \\ \zeta_{u} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$ | $egin{array}{c} T_u & rac{\zeta_u}{\eta_u} & rac{\gamma_u}{\mu_u} & 29 & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline \alpha_g \\ \hline 0.58 \\ A_u \\ \hline \alpha_u \\ \hline \alpha_u \\ \hline 0.59 \\ \hline 0 \\ 0 \\$ | $\left \begin{array}{c c} T \\ \zeta_{i} \\ \hline \end{array}\right \left \begin{array}{c c} T \\ \zeta_{i} \\ \hline \end{array}\right \left \begin{array}{c c} T \\ \hline \end{array}\right \left \begin{array}{c c} C \\ \hline \end{array}$ | $T_u 	imes $ T_u | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{0}{1}$ A_{u} $\frac{\mu_{g}}{1}$ 0 0 E_{u}^{1} E_{u}^{2} E_{g}^{2} E_{g}^{2} | $ \frac{\mu_g}{\sqrt{3}+i)} $ $ \frac{\sigma}{\sigma} $ | | |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | E_g^1 β_g 29.42 29.43 29.44 29.45 29.45 29.45 29.46 29.46 29.46 29.47 29.48 7_g < | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} A_{u} \\ \alpha_{u} \end{vmatrix}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{g} \begin{vmatrix} A_{g} \\ \alpha_{g} \end{vmatrix}$ $\gamma_{g} \mid 1$ $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{2} \\ \alpha_{g} \end{vmatrix}$ $\beta_{g} \mid 1$ $E_{g}^{1} \times A_{g} + A_{g$ | A_g A_u E_u^1 E_g^2 E_g^2 T_g T_g T_g T_g T_g A_{g} A_{g} | | | $\begin{array}{c} \zeta_{u} \\ \eta_{u} \\ \\ \zeta_{u} \\ \\ \eta_{u} \\ \\ \\ \Gamma_{u} \\ \\ \zeta_{u} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \eta_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline lpha_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\ \hline lpha_u \\ \hline \alpha_u \\ \hline \a$ | $egin{array}{c c} T_{ij} & \zeta_{ij} & \zeta$ | $T_u 	imes $ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{\eta_g}{\eta_g}$ $\frac{1}{2} \frac{\eta_u}{\eta_g}$ $\frac{1}{2} \frac{\eta_u}{\eta_g}$ $\frac{\eta_u}{\eta_g}$ $\frac{1}{2} \frac{\eta_u}{\eta_g}$ | $\frac{\mu_{u}}{0}$ $\frac{0}{0}$ $\frac{1}{1}$ A_{u} $\frac{\mu_{g}}{1}$ 0 0 E_{u}^{1} E_{u}^{2} E_{g}^{2} $\frac{\mu_{g}}{1}$ $\frac{1}{1}$ | $\frac{\mu_g}{\sqrt{3}+i)} = \frac{u_g}{\sqrt{3}-i} = \frac{u_g}{\sqrt{3}-i} = \frac{u_u}{\sqrt{3}-i} = \frac{\mu_u}{\sqrt{3}-i} = \mu$ | | |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | $egin{array}{c ccccccccccccccccccccccccccccccccccc$ | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid A_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{g}$ $\alpha_{g} \mid 1$ $C_{g}^{1} \times A_{g}$ | A_g A_g A_u A_u E_u^1 E_u^2 E_g^2 E_g^2 T_g μ_g 0 0 0 0 0 0 0 0 0 0 | | | $egin{array}{ c c c c c c c c c c c c c c c c c c c$ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline \alpha_g \\ \hline 0.58 \\ A_u \\ \hline \alpha_u \\ \hline \alpha_u \\ \hline 0.59 \\ \hline 0 \\ \hline 0.60 \\ \hline 0 \\ 0 \\$ | $\begin{array}{c c} & T_{i} \\ & \zeta_{i} \\ \hline & 1 \\ \hline & 0 \\ \hline & 0 \\ \hline & & \zeta_{i} \\ \hline & &$ | $T_u 	imes $ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ | $egin{array}{cccccccccccccccccccccccccccccccccccc$ | $ \frac{\mu_g}{\sqrt{3}+i)} = \frac{1}{0} $ $ \frac{u_g}{\sqrt{3}-i} = \frac{1}{0} $ $ \frac{u_u}{\sqrt{3}-i} = \frac{1}{0} $ $ \frac{\mu_u}{\sqrt{3}-i} = \frac{1}{0} $ $ \frac{\pi_u}{\sqrt{3}-i} = \frac{1}{0} $ | η_u | μ_u |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | 29.41 E_g^1 B_g^1 29.43 E_g^1 β_g 29.45 E_g^1 β_g 29.45 E_g^1 β_g 29.46 E_g^1 β_g 29.47 T_g T_g β_g 29.48 T_g T_g μ_g 0 μ_g 0 μ_g 0 μ_g 0 μ_g 0 α_g | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid A_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{g}$ $\alpha_{g} \mid 1$ $C_{g}^{1} \times A_{g}$ | A_g A_u A_u E_u^1 E_u^2 E_g^2 T_g μ_g 0 0 $i(\sqrt{3}+i)$ 2 T_u A_g μ_g 0 0 $i(\sqrt{3}+i)$ 2 A_g μ_g 0 0 1 | | $\frac{\zeta_u}{\zeta_u}$ | $\begin{array}{c c} \zeta_u \\ \hline \eta_u \\ \hline \\ \mu_u \\ \hline \end{array}$ $\begin{array}{c c} T_u \\ \hline \\ \zeta_u \\ \hline \\ \eta_u \\ \hline \\ \mu_u \\ \hline \end{array}$ $\begin{array}{c c} T_u \\ \hline \\ \zeta_u \\ \hline \\ \eta_u \\ \hline \\ \\ \mu_u \\ \hline \end{array}$ $\begin{array}{c c} T_u \\ \hline \\ \zeta_u \\ \hline \\ \\ \eta_u \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline \zeta_u & \hline \zeta_$ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\ \hline \al$ | $ \begin{vmatrix} T \\ \zeta_{1} \\ \zeta_{2} \\ 1 \end{vmatrix} = 0 $ $ \begin{vmatrix} T \\ \zeta_{1} \\ 0 \end{vmatrix} = 0 $ $ \begin{vmatrix} I \\ J \\ J$ | $T_u 	imes $ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ | $\frac{\mu_{u}}{0}$ $\frac{\mu_{u}}{0}$ $\frac{1}{0}$ $\frac{1}{1}$ $\frac{A_{u}}{0}$ $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{1}{0}$ $\frac{i(\cdot)}{0}$ | $\mu_g \frac{\mu_g}{\sqrt{3}+i)} \frac{1}{2} \frac{1}{0} \frac{u_u}{0} \frac{1}{0} \frac{u_u}{0} \frac{1}{0} \frac{u_u}{0} \frac{1}{0} \frac{u_u}{0} \frac{1}{0} \frac{u_u}{0} \frac{u_u}{0} \frac{1}{0} \frac{u_u}{0} \frac{u_u}$ | $\frac{\eta_u}{0}$ | 0
0
0 |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | E_g^1 β_g 29.43 E_g^1 β_g 29.43 E_g^1 β_g 29.45 E_g^1 β_g 29.46 E_g^1 β_g 29.48 T_g | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid X_{u} $ $\beta_{u} \mid 1$ $E_{u}^{1} \mid X_{u} $ $\beta_{u} \mid 1$ $E_{g}^{1} \times A_{u} $ $\beta_{g} \mid 1$ $E_{g}^{1} \times A_{g} $ $A_{g} \mid 1$ $E_{g}^{1} \times A_{g} $ $A_{g} \mid 1$ | A_g A_u A_u E_u^1 E_u^2 E_g^2 T_g μ_g 0 0 $i(\sqrt{3}+i)$ 2 A_g μ_g 0 0 1 A_u μ_u 0 | | $ \begin{array}{c} \zeta_u \\ \zeta_u \\ \zeta_u \end{array} $ $ \begin{array}{c} \eta_u \\ \eta_u \end{array} $ | $\begin{array}{c c} \zeta_u \\ \hline \eta_u \\ \hline \\ \mu_u \\ \hline \end{array}$ $\begin{array}{c c} T_u \\ \hline \\ \zeta_u \\ \hline \\ \eta_u \\ \hline \\ \mu_u \\ \hline \end{array}$ $\begin{array}{c c} T_u \\ \hline \\ \zeta_u \\ \hline \\ \eta_u \\ \hline \\ \\ \mu_u \\ \hline \end{array}$ $\begin{array}{c c} T_u \\ \hline \\ \zeta_u \\ \hline \\ \\ \eta_u \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $ | $egin{array}{c c} T_u & \hline \zeta_u & \hline \gamma_u & \hline & & & & & & & & & & & & & & & & & $ | $egin{array}{c} A_g \\ \hline lpha_g \\ \hline lpha_u \\ \hline \alpha_u \\ \hline \al$ | $ \begin{vmatrix} T_{i} & \zeta_{i} \\ & \zeta_{i} \end{vmatrix} $ $ \begin{vmatrix} T_{i} & \zeta_{i} \\ & \zeta_{i} \end{vmatrix} $ $ \begin{vmatrix} I & \zeta_{i} \\ & \zeta_{i} \end{vmatrix} $ | $T_u 	imes $ $\begin{bmatrix} u & \eta_u & \eta_u \\ 0 & 1 \\ 0 & 0 \end{bmatrix}$ $T_u 	imes $ $\begin{bmatrix} g & \eta_g \\ 0 & 0 \\ 0 & 1 \end{bmatrix}$ $T_u 	imes $ $\begin{bmatrix} \eta_g & 0 \\ 0 & \frac{(\sqrt{3}-i)}{2} \end{bmatrix}$ $T_u 	imes $ $\begin{bmatrix} \eta_u & 0 \\ 0 & \frac{\sqrt{3}+i)}{2} \end{bmatrix}$ $T_u 	imes $ $\begin{bmatrix} T_u \times \eta_u & 0 \\ 0 & \frac{(\sqrt{3}-i)}{2} \end{bmatrix}$ $T_u 	imes $ $T_u 	imes$ | $\frac{\mu_{u}}{0}$ $\frac{\mu_{u}}{0}$ $\frac{1}{0}$ $\frac{1}{1}$ $\frac{A_{u}}{0}$ $\frac{\mu_{g}}{0}$ $\frac{1}{0}$ $\frac{1}{0}$ $\frac{i(\cdot)}{0}$ | $\mu_g = \frac{\mu_g}{\sqrt{3}+i} = \frac{\mu_g}{0} = \frac{\mu_u}{0} = \mu_u$ | $\frac{\eta_u}{0}$ $\frac{0}{0}$ 0 | 0
0
0
0 |
| $egin{array}{c} E_g^1 \ eta_g \ eta_g \ eta_g \ eta_g \end{array}$ | 29.41 E_g β_g 29.43 E_g^1 β_g 29.44 E_g^1 β_g 29.45 E_g^1 β_g 29.46 E_g^1 β_g 29.47 T_g T_g η_g 0 μ_g 0 α_g </th <th>$E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid X_{u}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid X_{u}$ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{u}$ $F_{g}^{2} \mid A_{g}$ $\gamma_{g} \mid 1$ $F_{g}^{1} \times A_{g}$ $\beta_{g} \mid 1$ $F_{g}^{1} \times A$</th> <th>A_g A_u A_u E_u^1 E_u^2 E_g^2 E_g^1 T_g μ_g 0 0 $i(\sqrt{3}+i)$ 2 T_u A_g μ_g 0 0 1 A_u μ_u 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0</th> <th></th> <th>$\begin{array}{c} \zeta_u \\ \zeta_u \\ \zeta_u \end{array}$ $\begin{array}{c} \eta_u \\ \eta_u \\ \eta_u \end{array}$ $\begin{array}{c} \mu_u \\ \mu_u \end{array}$</th> <th>$\begin{array}{c c} \zeta_u \\ \hline \eta_u \\ \hline \\$</th> <th>$egin{array}{c ccccccccccccccccccccccccccccccccccc$</th> <th>$A_{g}$ α_{g} α_{g</th> <th>$\begin{array}{c c} & T_{i} \\ \hline & 1 \\ \hline & 0 \\$</th> <th>$T_u 	imes$ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{1}{2} \frac{1}{2}$ $T_u 	imes$ $\frac{\eta_g}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes$ $\frac{\eta_g}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes$ $\frac{\eta_g}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes$ $T_u 	imes$ $\frac{\eta_u}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes$ $T_u 	imes$ $T_u 	imes$ $\frac{\eta_u}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes$ $T_u 	imes$</th> <th>$\begin{array}{c c} \mu_{u} \\ \hline \mu_{u} \\ \hline 0 \\ \hline 0 \\ \hline 1 \\ A_{u} \\ \hline \mu_{g} \\ \hline 1 \\ \hline 0 \\ \hline 0 \\ \hline E_{u}^{i} \\ \hline \\ E_{u}^{i} \\ \hline \\ E_{g}^{i} \\ \hline \\ E_{g}^{i} \\ \hline \\ E_{g}^{i} \\ \hline \\ \hline \\ E_{g}^{i} \\ \hline \\ \\ \\ E_{g}^{i} \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$</th> <th>$\mu_g = \frac{\mu_g}{\sqrt{3}+i} = \frac{\mu_g}{0} = \frac{\mu_u}{0} = \mu_u$</th> <th>$\frac{\eta_u}{0}$ $\frac{0}{0}$ $\frac{0}{0}$</th> <th>0 0 0</th> | $E_{g}^{1} \times A_{g} \begin{vmatrix} E_{g}^{1} \\ \beta_{g} \end{vmatrix}$ $\alpha_{g} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{1} \\ \beta_{u} \end{vmatrix}$ $\alpha_{u} \mid 1$ $E_{g}^{1} \times A_{u} \begin{vmatrix} E_{u}^{2} \\ \gamma_{u} \end{vmatrix}$ $\beta_{u} \mid 1$ $E_{u}^{1} \mid X_{u} $ $\beta_{u} \mid 1$ $E_{u}^{1} \mid X_{u} $ $\gamma_{u} \mid 1$ $E_{g}^{1} \times A_{u} $ $F_{g}^{2} \mid A_{g} $ $\gamma_{g} \mid 1$ $F_{g}^{1} \times A_{g} $ $\beta_{g} \mid 1$ $F_{g}^{1} \times A$ | A_g A_u A_u E_u^1 E_u^2 E_g^2 E_g^1 T_g μ_g 0 0 $i(\sqrt{3}+i)$ 2 T_u A_g μ_g 0 0 1 A_u μ_u 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 | | $ \begin{array}{c} \zeta_u \\ \zeta_u \\ \zeta_u \end{array} $ $ \begin{array}{c} \eta_u \\ \eta_u \\ \eta_u \end{array} $ $ \begin{array}{c} \mu_u \\ \mu_u \end{array} $ | $\begin{array}{c c} \zeta_u \\ \hline \eta_u \\ \hline \\ $ | $egin{array}{c ccccccccccccccccccccccccccccccccccc$ | A_{g} α_{g} α_{g | $ \begin{array}{c c} & T_{i} \\ \hline & 1 \\ \hline & 0 \\ $ | $T_u 	imes $ $\frac{1}{2} \frac{\eta_u}{\eta_u}$ $\frac{1}{2} \frac{1}{2} \frac{1}{2}$ $T_u 	imes $ $\frac{\eta_g}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes $ $\frac{\eta_g}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes $ $\frac{\eta_g}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes $ $T_u 	imes $ $\frac{\eta_u}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes $ $T_u 	imes $ $T_u 	imes $ $\frac{\eta_u}{0} \frac{1}{0} \frac{1}{0}$ $T_u 	imes $ | $\begin{array}{c c} \mu_{u} \\ \hline \mu_{u} \\ \hline 0 \\ \hline 0 \\ \hline 1 \\ A_{u} \\ \hline \mu_{g} \\ \hline 1 \\ \hline 0 \\ \hline 0 \\ \hline E_{u}^{i} \\ \hline \\ E_{u}^{i} \\ \hline \\ E_{g}^{i} \\ \hline \\ E_{g}^{i} \\ \hline \\ E_{g}^{i} \\ \hline \\ \hline \\ E_{g}^{i} \\ \hline \\ \\ \\ E_{g}^{i} \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $ | $\mu_g = \frac{\mu_g}{\sqrt{3}+i} = \frac{\mu_g}{0} = \frac{\mu_u}{0} = \mu_u$ | $\frac{\eta_u}{0}$ $\frac{0}{0}$ $\frac{0}{0}$ | 0 0 0 |

		29.6	34	$T_u \times T_u$			
T_u	T_u	$E_g^2 \\ \gamma_g$	$\begin{vmatrix} A_g \\ \alpha_g \end{vmatrix}$	$\begin{array}{c} E_g^1 \\ \beta_g \end{array}$	T_g ζ_g	η_g	μ
ζ_u	$ \begin{array}{c} \zeta_u \\ \eta_u \\ \mu_u \end{array} $	$ \begin{array}{c c} -\frac{\sqrt{3}}{6} - \frac{i}{2} \\ 0 \\ 0 \end{array} $	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$ \begin{array}{c} -\frac{\sqrt{3}}{6} + \frac{i}{2} \\ 0 \\ 0 \end{array} $	$\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$	0 1 0	
η_u η_u η_u	$ \begin{array}{c} \zeta_u \\ \eta_u \\ \mu_u \end{array} $		$\begin{bmatrix} 0 \\ \frac{\sqrt{3}}{3} \\ 0 \end{bmatrix}$	$ \begin{array}{c} 0 \\ -\frac{\sqrt{3}}{6} - \frac{i}{2} \\ 0 \end{array} $	0 0 0	0 0 0	(
$\mu_u \\ \mu_u \\ \mu_u$	$ \zeta_u \\ \eta_u \\ \mu_u $	$0 \\ 0 \\ \frac{\sqrt{3}}{3}$	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$0\\0\\\frac{\sqrt{3}}{3}$	$\begin{vmatrix} 1 \\ 0 \\ 0 \end{vmatrix}$	0 0 0	
		•	30	\mathbf{G}	rc	u	r
		6	30	G			_
			30	30.1 A ₁	A_1 A_1	ׯ	_
			30	30.1 A ₁	A_1 A_1 A_1 α	$\times A_1$ α 1	A_1
			30	$egin{array}{c} {\bf 30.1} & & & \\ & {A_1} & & & \\ \hline & {lpha} & & & \\ {\bf 30.2} & & & \\ & {A_1} & & & \\ \hline \end{array}$	A_1 A_1 α A_1 A_1	$\begin{array}{c} \times & A \\ A_1 \\ \alpha \\ \hline 1 \\ \times & A \\ A_2 \\ \beta \end{array}$	A_1
			30	$egin{array}{c} {\bf 30.1} & & & \\ & {A_1} & & & \\ \hline & {lpha} & & & \\ {\bf 30.2} & & & \\ & {A_1} & & & \\ \hline \end{array}$	A_1 A_1 α A_1 A_1 A_2 β	$\begin{array}{c} \times & A \\ A_1 \\ \hline 1 \\ \times & A \\ A_2 \\ \hline \beta \\ \hline \end{array}$	$oldsymbol{A}_1$

30.3 $A_1 \times E$
$egin{array}{c ccc} A_1 & E & E & \\ \hline lpha & \gamma & \zeta & \\ \hline lpha & \zeta & 0 & 1 & \\ \hline \end{array}$
30.4 $A_1 \times T_1$
$\begin{array}{c ccccc} & & T_1 & \\ A_1 & T_1 & \eta & \mu & \nu \\ \hline \alpha & \eta & 1 & 0 & 0 \\ \alpha & \mu & 0 & 1 & 0 \\ \alpha & \nu & 0 & 0 & 1 \\ \end{array}$
30.5 $A_1 \times T_2$
$\begin{array}{c ccccc} A_1 & T_2 & & & \\ A_1 & T_2 & \xi & \phi & \chi \\ \hline \alpha & \xi & 1 & 0 & 0 \\ \alpha & \phi & 0 & 1 & 0 \\ \alpha & \chi & 0 & 0 & 1 \\ \end{array}$
30.6 $A_2 \times A_1$
$\begin{array}{c cc} A_2 & A_1 & \beta \\ \hline \beta & \alpha & 1 \end{array}$

30.7	$A_2 \times A_2$
A_2	$A_2 \mid A_1 \atop \alpha$
β	$\beta \mid 1$
30.8	$A_2 \times E$
	$\mid E$

30.11
$$E \times A_1$$

$$\begin{array}{c|cccc}
E & A_1 & \gamma & \zeta \\
\hline
\gamma & \alpha & 1 & 0 \\
\hline
\zeta & \alpha & 0 & 1
\end{array}$$

30.12
$$E \times A_2$$

$$\begin{array}{c|cccc}
E & A_2 & \gamma & \zeta \\
\hline
\gamma & \beta & 0 & -1 \\
\hline
\zeta & \beta & 1 & 0
\end{array}$$

	30	0.13	B E	$\times E$	
E	E	A_1 α	β	$E \\ \gamma$	ζ
$\gamma \\ \gamma$	γ ζ	$ \begin{array}{ c c } \hline \sqrt{2} \\ 2 \\ 0 \end{array} $	$\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix}$	$ \begin{array}{c c} -\frac{\sqrt{2}}{2} \\ 0 \end{array} $	$0\\ \frac{\sqrt{2}}{2}$
ζ ζ	γ ζ	$\begin{array}{ c c }\hline 0\\ \frac{\sqrt{2}}{2}\\ \hline \end{array}$	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$	$0 \\ \frac{\sqrt{2}}{2}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$

			30	0.14	E	$\times T$	Γ_1	
i	E	T_1	$egin{array}{c} T_1 \\ \eta \end{array}$	μ	ν	T_2 ξ	ϕ	χ
,	$\gamma \\ \gamma \\ \gamma$	$\eta \ \mu \ u$	$\begin{bmatrix} \frac{1}{2} \\ 0 \\ 0 \end{bmatrix}$	$0\\-1\\0$	$0\\0\\\frac{1}{2}$	$\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$	$0\\0\\-\frac{\sqrt{3}}{2}$	$\begin{array}{c} \frac{\sqrt{3}}{2} \\ 0 \\ 0 \end{array}$
	ζ ζ	$\eta \ \mu \ u$	$\begin{bmatrix} \frac{\sqrt{3}}{2} \\ 0 \\ 0 \end{bmatrix}$	0 0 0	$0\\0\\-\frac{\sqrt{3}}{2}$	$\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$	$0 \\ 0 \\ -\frac{1}{2}$	$-\frac{1}{2}$ 0 0

		30.	15	E	$\times 7$	$\overline{2}$	
E	T_2	T_1 η	μ	ν	T_2 ξ	ϕ	χ
γ	ξ	0	0	0	1	0	0
γ	ϕ	0	0	$\frac{\sqrt{3}}{2}$	0	$-\frac{1}{2}$	0
γ	χ	$-\frac{\sqrt{3}}{2}$	0	0	0	0	$-\frac{1}{2}$
ζ	ξ	0	-1	0	0	0	0
ζ	ϕ	0	0	$\frac{1}{2}$	0	$\frac{\sqrt{3}}{2}$	0
ζ	χ	$\frac{1}{2}$	0	0	0	0	$-\frac{\sqrt{3}}{2}$
				-			

			30.1	7 7	$\vec{\gamma}_1 \times A$	2		
			-	$\begin{array}{c c} A_2 & T_2 \\ \hline \beta & 0 \end{array}$	$\frac{\phi}{0}$ $\frac{\chi}{1}$	_		
			μ	$\begin{array}{c c} \beta & 1 \\ \hline \beta & 0 \\ \hline \end{array}$	0 0	-		
			30.1	8 7	$\Gamma_1 \times E$	7		
	T_1	$E \mid$	T_1 η μ $\frac{1}{2}$ 0	$\frac{\nu}{0}$	$\begin{bmatrix} T_2 \\ \xi \end{bmatrix}$	$\frac{\phi}{0}$	$\frac{\chi}{\sqrt{3}}$	
	$\frac{\eta}{\mu}$	$\begin{bmatrix} \gamma \\ \zeta \end{bmatrix}$	$\frac{\sqrt[2]{3}}{2} 0$	0	0 0	0	$ \frac{\sqrt{3}}{2} \\ -\frac{1}{2} $	
	$\frac{\mu}{\nu}$	$\begin{array}{c c} \zeta & \\ \hline \gamma & \\ \zeta & \end{array}$	$ \begin{array}{ccc} 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{array} $	$ \begin{array}{c} 0 \\ \frac{1}{2} \\ -\frac{\sqrt{2}}{2} \end{array} $	$\begin{array}{c c} & 1 \\ \hline & 0 \\ \hline & 0 \end{array}$	0 $-\frac{\sqrt{3}}{2}$ $-\frac{1}{2}$	0 0 0	
		·	30.1		$T_1 \times T$			
T_1	$\begin{vmatrix} A_1 \\ \alpha \end{vmatrix}$	$\frac{E}{\gamma}$	ζ	$\begin{bmatrix} T_1 \\ \eta \end{bmatrix}$	μ	ν	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	
$\eta \ \mu \ u$	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{6}}{6} \\ 0 \\ 0 \end{array}$	$ \frac{\sqrt{2}}{2} $ 0 0	0 0 0	$0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	$\begin{vmatrix} 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{vmatrix}$	$\frac{2}{0}$ 0
$\eta \ \mu \ u$	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$0\\ -\frac{\sqrt{6}}{3}\\ 0$	0 0 0	$\begin{array}{c c} 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \end{array}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$ \begin{vmatrix} 0 & \frac{\sqrt{2}}{2} \\ 0 & 0 \\ 0 & 0 \end{vmatrix} $	0
η μ ν	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$0 \\ 0 \\ \frac{\sqrt{6}}{6}$	$0 \\ 0 \\ -\frac{\sqrt{2}}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$ \begin{array}{c} -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array} $	0 0 0	$ \begin{array}{c cccc} & \sqrt{2} & 0 \\ & 0 & 0 \\ & 0 & 0 \end{array} $	0 $\frac{\sqrt{2}}{2}$
-	1 3 1	6	30.2		$T_1 \times T$		1 0 0	
T_2	$\begin{vmatrix} A_2 \\ \beta \end{vmatrix}$	$E \\ \gamma$	ζ	$\left egin{array}{c} T_1 \\ \eta \end{array} \right $	μ ν	$\begin{bmatrix} T_2 \\ \xi \end{bmatrix}$	ϕ	χ
ξ ϕ χ	$\begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	$0 \\ 0 \\ -\frac{\sqrt{2}}{2}$	0 $\frac{\sqrt{6}}{6}$	0 0 0	$\begin{array}{cc} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \\ 0 & 0 \end{array}$	$\begin{bmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{bmatrix}$	$\begin{array}{cc} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0
ξ φ χ	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	0 0 0	$-\frac{\sqrt{6}}{3}$ 0 0	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$ \begin{array}{ccc} 0 & 0 \\ 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{array} $	$\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$	$0\\0\\-\frac{\sqrt{2}}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$
ξ ϕ χ	$\begin{bmatrix} 0 \\ \frac{\sqrt{3}}{3} \\ 0 \end{bmatrix}$	$0 \\ \frac{\sqrt{2}}{2} \\ 0$	$\begin{array}{c} 0\\ \frac{\sqrt{6}}{6}\\ 0 \end{array}$	$ \begin{array}{c c} & \sqrt{2} \\ \hline 2 \\ 0 \\ 0 \end{array} $	$ \begin{array}{ccc} 0 & 0 \\ 0 & 0 \\ \frac{\sqrt{2}}{2} & 0 \end{array} $	$\begin{array}{ c c } \hline & 0 \\ & 0 \\ & \frac{\sqrt{2}}{2} \\ \hline \end{array}$	0	$ \begin{array}{c} -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array} $
λ	~		30.2	l	$\overline{\gamma}_2 \times A$		v	· ·
			$\frac{\xi}{\phi}$	$ \begin{array}{c c} A_1 & T_2 \\ \alpha & 1 \\ \alpha & 0 \\ \hline \alpha & 0 \end{array} $	$ \begin{array}{ccc} \phi & \chi \\ 0 & 0 \\ 1 & 0 \end{array} $	- -		
				·	$\overline{\gamma}_2 \times A$	2		
			ξ			- -		
				$\beta \mid 1$	$0 0$ $T_2 \times E$	ה		
	T_2	$_{E}$	T_1	μ ,	T_2	ϕ	χ	
	ξ ξ	$\begin{bmatrix} \gamma \\ \zeta \end{bmatrix}$	0	0 (1 0	0 0	0	
	$\frac{\phi}{\phi}$	ζ	$0 \\ 0 \\ -\frac{\sqrt{3}}{2}$		$\begin{bmatrix} \overline{3} & 0 \\ \overline{2} & 0 \end{bmatrix}$	$\frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}}$	$0 \\ 0 \\ -\frac{1}{2}$	
	χ	$\begin{bmatrix} \gamma \\ \zeta \end{bmatrix}$	$\frac{1}{2}$	0 (0 -	$ \begin{array}{c} -\frac{1}{2} \\ -\frac{\sqrt{3}}{2} \end{array} $	
T_1	$A_2 \mid \beta \mid$	$\frac{E}{\gamma}$	ζ	T_1	$\frac{\mu \nu}{}$	T_2	ϕ	χ

 T_1 η η μ μ ν ν

				3 0.∠	4	$I_2 \times$	$\langle I_1 \rangle$			
T_2	T_1	$\begin{vmatrix} A_2 \\ \beta \end{vmatrix}$	$\frac{E}{\gamma}$	ζ	$egin{array}{c} T_1 \ \eta \end{array}$	μ	ν	T_2 ξ	ϕ	χ
ξ ξ ξ	η μ ν	$\begin{array}{c c} 0 \\ \frac{\sqrt{3}}{3} \\ 0 \end{array}$	0 0 0	$\begin{array}{c} 0\\ \frac{\sqrt{6}}{3}\\ 0 \end{array}$	$\begin{array}{ c c }\hline 0\\0\\\frac{\sqrt{2}}{2}\\ \end{array}$	0 0 0	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$0 \\ 0 \\ -\frac{\sqrt{2}}{2}$
ϕ ϕ ϕ	$\eta \ \mu \ u$	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$0 \\ -\frac{\sqrt{2}}{2}$	$0 \\ -\frac{\sqrt{6}}{6}$	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0	$0 \\ \frac{\sqrt{2}}{2} \\ 0$
$\begin{array}{c} \chi \\ \chi \\ \chi \end{array}$	η μ ν	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$-\frac{\sqrt{6}}{6}$ 0 0	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$\begin{array}{c} 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	0 0 0

				30.2	5 T	$\frac{1}{2} \times T$	$\overset{7}{2}$			
T_2	T_2	A_1 α	$E \\ \gamma$	ζ	$egin{array}{c} T_1 \\ \eta \end{array}$	μ	ν	$\left \begin{array}{c} T_2 \\ \xi \end{array} \right $	ϕ	χ
ξ ξ ξ	ξ φ χ	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$ \begin{vmatrix} -\frac{\sqrt{6}}{3} \\ 0 \\ 0 \end{vmatrix} $	0 0 0	$\begin{vmatrix} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{vmatrix}$	0 0 0	$0 \\ \frac{\sqrt{2}}{2}$	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$
ϕ ϕ ϕ	ξ φ χ	$\begin{bmatrix} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{bmatrix}$	$\begin{array}{c} 0\\ \frac{\sqrt{6}}{6}\\ 0 \end{array}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$0 \\ -\frac{\sqrt{2}}{2}$	0 0 0	$ \begin{array}{ c c } 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array} $	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
$\begin{array}{c} \chi \\ \chi \\ \chi \end{array}$	ξ ϕ χ	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$\begin{array}{c} 0 \\ 0 \\ \frac{\sqrt{6}}{6} \end{array}$	$0 \\ \frac{\sqrt{2}}{2}$	0 0 0	$0 \\ \frac{\sqrt{2}}{2} \\ 0$	$-\frac{\sqrt{2}}{2}$ 0 0	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0

31 Group T_d

1	Group	,
	31.1 $A_1 \times A_1$	
	$egin{array}{c c} A_1 & A_1 & A_1 \\ \hline lpha & lpha & 1 \\ \hline \end{array}$	
	31.2 $A_1 \times A_2$	
	$\begin{array}{c cc} A_1 & A_2 & \beta \\ \hline \alpha & \beta & 1 \end{array}$	
	15	

31.3 $A_1 \times E$
$egin{array}{c c c} A_1 & E & E \\ \hline lpha & \gamma & \zeta \\ \hline lpha & \gamma & 1 & 0 \\ lpha & \zeta & 0 & 1 \\ \hline \end{array}$
31.4 $A_1 \times T_2$
$\begin{array}{c ccccc} & & T_2 & & \\ A_1 & T_2 & \xi & \phi & \chi \\ \hline \alpha & \xi & 1 & 0 & 0 \\ \alpha & \phi & 0 & 1 & 0 \\ \alpha & \chi & 0 & 0 & 1 \\ \end{array}$
31.5 $A_1 \times T_1$
$\begin{array}{c ccccc} & & T_1 & & \\ A_1 & T_1 & \eta & \mu & \nu \\ \hline \alpha & \eta & 1 & 0 & 0 \\ \alpha & \mu & 0 & 1 & 0 \\ \alpha & \nu & 0 & 0 & 1 \\ \end{array}$
31.6 $A_2 \times A_1$
$\begin{array}{c cc} A_2 & A_1 & \beta \\ \hline \beta & \alpha & 1 \end{array}$
31.7 $A_2 \times A_2$
$egin{array}{c c c} A_2 & A_2 & A_1 \ \hline eta & eta & 1 \ \hline \end{array}$
31.8 $A_2 \times E$
$\begin{array}{c cccc} A_2 & E & E \\ \hline \beta & \gamma & 1 & 0 \\ \beta & \zeta & 0 & -1 \end{array}$
31.9 $A_2 \times T_2$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
31.10 $A_2 \times T_1$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
31.11 $E \times A_1$
$\begin{array}{c cccc} E & A_1 & E \\ \hline \gamma & \alpha & 1 & 0 \\ \hline \zeta & \alpha & 0 & 1 \end{array}$
31.12 $E \times A_2$
$ \begin{array}{c cccc} E & A_2 & \gamma & \zeta \\ \hline \gamma & \beta & 1 & 0 \\ \hline \zeta & \beta & 0 & -1 \end{array} $
31.13 $E \times E$ $ A_1 A_2 E$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

	$\begin{bmatrix} \zeta & \gamma \\ \zeta & \zeta \end{bmatrix}$	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \end{array} \begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$	0 1	0	
	31.1	4 E	$\times T_2$	}	
$\left egin{array}{c} T_1 \\ \eta \end{array} \right $	μ	ν	$\left \begin{array}{c} T_2 \\ \xi \end{array} \right $	ϕ	χ
$\begin{vmatrix} -\frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{vmatrix}$	$ \begin{array}{c} 0 \\ -\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \\ 0 \end{array} $	0 $\frac{0}{\sqrt[3]{-1}\sqrt{2}}$	$\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{vmatrix}$	$ \begin{array}{c} 0 \\ \underline{(-1)^{\frac{2}{3}}\sqrt{2}} \\ 0 \end{array} $	0 $-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$
$\begin{bmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{bmatrix}$	$-\frac{0}{\sqrt[3]{-1}\sqrt{2}}$	0	$\begin{bmatrix} \frac{\sqrt{2}}{2} \\ 0 \end{bmatrix}$	$0 - \frac{\sqrt[3]{-1}\sqrt{2}}{\sqrt{2}}$	0

ζ	$\begin{bmatrix} \phi & 2 \\ \phi & 0 \\ \chi & 0 \end{bmatrix}$	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	$ \begin{array}{ccc} \overline{2} & 0 \\ \underline{(-1)^{\frac{2}{3}}\sqrt{2}} \\ 2 \end{array} $	$\begin{bmatrix} 2 \\ 0 \\ 0 \end{bmatrix}$	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	$ \begin{array}{c} 0 \\ \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \end{array} $
		31	.15 E	$\times T_1$	L	
E	$T_1 \mid \begin{array}{c} T_1 \\ \eta \end{array}$	μ	u	T_2 ξ	ϕ	χ
γ γ γ	$ \begin{array}{c c} \eta & \frac{\sqrt{2}}{2} \\ \mu & 0 \\ \nu & 0 \end{array} $	$ \begin{array}{c} 0 \\ \underline{(-1)^{\frac{2}{3}}\sqrt{2}} \\ 0 \end{array} $	$ \begin{array}{c c} 0 \\ -\frac{\sqrt[3]{-1}\sqrt{2}}{2} \end{array} $	$-\frac{\sqrt{2}}{2}$ 0 0	$ \begin{array}{c} 0 \\ -\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \\ 0 \end{array} $	0 $\frac{0}{\sqrt[3]{-1}\sqrt{2}}$
ς ς ς	$ \begin{array}{c c} \eta & \frac{\sqrt{2}}{2} \\ \mu & 0 \\ \nu & 0 \end{array} $	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	$ \begin{array}{c c} 0 \\ 0 \\ \underline{(-1)^{\frac{2}{3}}\sqrt{2}} \\ 2 \end{array} $	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$-\frac{0}{\sqrt[3]{-1}\sqrt{2}}$	0 0 $\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$

η	μ		ν		ξ		ϕ	χ
$\begin{vmatrix} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{vmatrix}$	$ \begin{array}{c} 0 \\ \frac{(-1)^{\frac{2}{3}}}{2} \\ 0 \end{array} $		0 $-\frac{\sqrt[3]{-}}{2}$	$\frac{1\sqrt{2}}{2}$	0 0	$\frac{\sqrt{2}}{2}$	$ \begin{array}{c} 0 \\ -\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \\ 0 \end{array} $	0 $\frac{0}{\sqrt[3]{-1}\sqrt{2}}$
$\begin{bmatrix} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{bmatrix}$	$-\frac{0}{\sqrt[3]{-1}\sqrt{2}}$	<u>/2</u>	0 $(-1)^{\frac{2}{3}}$	$\sqrt{2}$	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$		$-\frac{0}{\sqrt[3]{-1}\sqrt{2}}$	0 $\underbrace{(-1)^{\frac{2}{3}}\sqrt{2}}_{2}$
	ę	31.	16		2 ×	A_1	l	
		T_2	A_1	T_2 ξ	ϕ	χ		
	- -	ξ	α	1	0	0		
	. -	ϕ	α	0	1	0		
		χ	α	0	0	1		

•	31.	17	T_2	×	A_2
			T_1 η		
	T_2	A_2	η	μ	ν
	ξ	β	1	0	0
	ϕ	β	0	1	0
	χ	β	0	0	1

		Ī	T_1	3	31.18	T_2		T				
	$\frac{T_2}{\xi}$	$E \mid \gamma \mid$	$\frac{\eta}{-\frac{\sqrt{2}}{2}}$	$\frac{\mu}{0}$		$\frac{\nu}{0}$			$\frac{\phi}{0}$		$\frac{\chi}{0}$	_
	ξ ξ ϕ	ζ γ	$\frac{\frac{\sqrt{2}}{2}}{2}$	0 $-\frac{(-1)^{\frac{2}{3}}}{}$	$\frac{2}{3}\sqrt{2}$	0	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ \hline & 0 \end{array}$	<u>(-</u>	0 $1)^{\frac{2}{3}}\sqrt{2}$		0	_
	$\frac{\phi}{\phi}$	$\begin{vmatrix} \gamma \\ \zeta \end{vmatrix}$	0	$-\frac{\frac{(-1)^{\frac{2}{3}}}{2}}{-\frac{\sqrt[3]{-1}}{2}}$	$\frac{\sqrt{2}}{\sqrt{2}}$	0	0		$\frac{1)^{\frac{2}{3}}\sqrt{2}}{2^{\frac{3\sqrt{-1}\sqrt{2}}{2}}}$	(0	_
	χ	ζ	0	0	<u>(-2</u>	$\frac{-1\sqrt{2}}{2}$ $1)^{\frac{2}{3}}\sqrt{2}$ 2	0		0	(-1)	$\frac{-1\sqrt{2}}{2}$ $\frac{2}{3}\sqrt{2}$ 2	
		Ι 4.	l 1		1.19		$\times 7$	$\overline{2}$	ı	T.		
T_2	T_2 ξ	$\begin{array}{ c c } A_1 \\ \alpha \\ \hline \end{array}$	$\frac{1}{\gamma}$	$-\frac{i}{2}$	$\frac{\zeta}{-\frac{\sqrt{3}}{6} - \frac{i}{2}}$	$\begin{array}{ c c c }\hline T_1\\ \eta\\\hline \hline &0 \end{array}$		$\frac{\mu}{0}$	ν	T_2 ξ 0	ϕ 0	$\frac{\chi}{0}$
ξ ξ ξ	ϕ χ	$\begin{bmatrix} 3 \\ 0 \\ 0 \end{bmatrix}$)	$\begin{matrix} 6 & 2 \\ 0 & \\ 0 & \end{matrix}$	$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$		$0 \\ \frac{\sqrt{2}}{2}$	$ \begin{array}{c} 0 \\ -\frac{\sqrt{2}}{2} \\ 0 \end{array} $	0	0 $\frac{\sqrt{2}}{2}$	$0 \\ \frac{\sqrt{2}}{2} \\ 0$
ϕ ϕ	$\xi \phi$	$\begin{bmatrix} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{bmatrix}$	$-\frac{\sqrt{3}}{6}$	$+\frac{i}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	0 0		0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$	0 0	0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$
$\frac{\phi}{\chi}$	$\frac{\chi}{\xi}$	0)	0	0	_	$0 - \frac{\sqrt{2}}{2}$	0	$ \frac{\sqrt{2}}{2} $ $ 0 $ $ \frac{\sqrt{2}}{2} $	$\begin{array}{c} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{array}$	0
χ χ	ϕ χ	$\begin{array}{c c} 0 \\ \frac{\sqrt{3}}{3} \end{array}$	$\frac{}{3}$	<u>3</u>	$0 \\ -\frac{\sqrt{3}}{6} + \frac{i}{2}$	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$	<u>2</u>	0	0	$\frac{\sqrt{2}}{2}$	0	0
			i		1.20		$\times 7$	1	1 _			
T_2		A		$\frac{E}{\gamma}$	ζ	$\begin{array}{ c c c c c } T_1 & & & & \\ \eta & & & & \\ \hline & & & & \end{array}$	$\frac{\mu}{2}$	ν	$\begin{bmatrix} T_2 \\ \xi \end{bmatrix}$	φ		χ
ξ ξ ξ	$\eta \ \mu \ u$	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$		$\frac{\overline{3}}{0} - \frac{i}{2}$ 0 0	$\frac{\sqrt{3}}{6} + \frac{i}{2}$ 0 0	0 0 0	0 $\frac{\sqrt{2}}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	0 0 0	0 $\frac{\sqrt{2}}{2}$	_	0 $-\frac{\sqrt{2}}{2}$ 0
ϕ ϕ		0 \(\frac{\sqrt{3}}{3}		$\frac{0}{3} + \frac{i}{2}$	$0\\ -\frac{\sqrt{3}}{3}$	0 0	0 0	$\frac{\sqrt{2}}{2}$	0 0	0 0		$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \end{array}$
$\frac{\phi}{\chi}$	ν			0 0	0 0	$ \begin{array}{ c c } \hline 0 \\ \frac{\sqrt{2}}{2} \end{array} $	$\begin{array}{c} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{array}$	0	$\begin{array}{c c} -\frac{\sqrt{2}}{2} \\ \hline 0 \end{array}$	$-\frac{\sqrt{2}}{2}$	<u>2</u>	0
χ χ		$\frac{1}{\sqrt{3}}$	<u>3</u>	$\frac{0}{\sqrt{3}}$	$0 \\ \frac{\sqrt{3}}{6} - \frac{i}{2}$	$\begin{array}{ c c }\hline \frac{\sqrt{2}}{2}\\ 0\\ \end{array}$	0	0	$\begin{array}{c c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	0		0
				3	1.21	T_1	× A	\mathbf{I}_1				
					T_1 A_1	$\begin{bmatrix} T_1 \\ \eta \end{bmatrix}$	$\frac{\mu}{\sigma}$	_				
				_	$\frac{\eta}{\mu} = \frac{\alpha}{\alpha}$	1 0	0 0	<u> </u>				
				3	$egin{array}{cccc} u & lpha \ & & \ & \ & \ & \ & \ & \ & \ & \ & $	$\begin{bmatrix} 0 \end{bmatrix}$	0 1					
					T_1 A_2	T_2	$\phi \chi$					
				<u>-</u>	η β	1 0	$\begin{pmatrix} \varphi & \lambda \\ 0 & 0 \\ 1 & 0 \end{pmatrix}$	_				
				_	$\frac{\mu}{\nu} \frac{\beta}{\beta}$			_				
		ī	/TI	3	1.23							
	T_1	$E \mid$	T_1 η $\sqrt{2}$	μ	$\frac{\nu}{0}$		$T_2 \\ \xi$ $-\frac{\sqrt{2}}{\frac{\sqrt{2}}{2}}$		ϕ		$\frac{\chi}{0}$	_
	η	$\frac{\zeta}{\zeta}$	$\frac{\frac{2}{\sqrt{2}}}{2}$	0 $\frac{0}{-1)^{\frac{2}{3}}\sqrt{2}}$	$ \begin{array}{c c} \nu \\ 0 \\ 0 \\ \hline 0 \\ -\frac{\sqrt[3]{-1}}{2} \\ (-1)^{\frac{3}{3}} \\ 2 \end{array} $ 1.24		$\frac{\sqrt{2}}{2}$	(-	0 $\frac{0}{-1)^{\frac{2}{3}}\sqrt{2}}$		0	_
	$\frac{\mu}{\mu}$	$\frac{\gamma}{\zeta}$	0 -	$\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0 3/-1	$\overline{1}\sqrt{2}$	0		$ \frac{\sqrt[3]{-1}\sqrt{2}}{2} $	3√-	0 $\frac{1}{-1}\sqrt{2}$	_
	ν	ζ	0	0	$\frac{(-1)^{\frac{2}{3}}}{2}$	$\sqrt{2}$	0		0	(-1	$ \begin{array}{c} 2 \\ 1 \\ 2 \\ 3 \\ 2 \end{array} $,
			i	3	1.24	T_1	$\times 7$	$\overline{2}$				

T_1	T_2	$\begin{vmatrix} A_2 \\ \beta \end{vmatrix}$	$E \\ \gamma$	ζ	$\begin{bmatrix} T_1 \\ \eta \end{bmatrix}$	μ	ν	T_2 ξ	ϕ	χ
η η η	ξ ϕ χ	$\begin{array}{ c c }\hline \frac{\sqrt{3}}{3} \\ 0 \\ 0 \\ \end{array}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	$\frac{\sqrt{3}}{6} + \frac{i}{2}$ 0 0	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$
$\mu \ \mu \ \mu$	ξ ϕ χ	$\begin{array}{c c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$-\frac{0}{\frac{\sqrt{3}}{6}} + \frac{i}{2}$	$0\\ -\frac{\sqrt{3}}{3}\\ 0$	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{bmatrix}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$0 \\ -\frac{\sqrt{2}}{2}$	0 0 0	$ \frac{\sqrt{2}}{2} \\ 0 \\ 0 $
ν ν ν	ξ φ χ	$\begin{array}{ c c } 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	$0 \\ 0 \\ \frac{\sqrt{3}}{3}$	0 0 $\frac{\sqrt{3}}{6} - \frac{i}{2}$	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0
			ć	31.25	T_1	$\times T$	1			

				01.20	- 1 /\	- 1				
T_1	T_1	A_1 α	$egin{array}{c} E \ \gamma \end{array}$	ζ	$egin{array}{c} T_1 \\ \eta \end{array}$	μ	ν	T_2 ξ	ϕ	χ
$\eta \\ \eta \\ \eta$	η μ ν	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$\begin{vmatrix} -\frac{\sqrt{3}}{6} - \frac{i}{2} \\ 0 \\ 0 \end{vmatrix}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	0 0 0	$0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$0 \\ \frac{\sqrt{2}}{2} \\ 0$
$\mu \ \mu \ \mu$	$\eta \ \mu \ u$	$\begin{array}{c c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$\begin{vmatrix} 0\\ -\frac{\sqrt{3}}{6} + \frac{i}{2}\\ 0 \end{vmatrix}$	$0 \\ \frac{\sqrt{3}}{3} \\ 0$	$\begin{vmatrix} 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix}$	0 0 0	$ \begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array} $	$\begin{array}{ c c } 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
ν ν ν	η μ $ \nu$	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$\begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	0 0 $-\frac{\sqrt{3}}{6} + \frac{i}{2}$	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0	$\begin{array}{ c c } 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{array}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0

32 Group O_h

32.1 $A_{1g} \times A_{1g}$

32.6 $A_{1g} \times E_g$ $\begin{array}{c|cccc}
A_{1g} & E_g & \gamma_g & \zeta_g \\
\hline
\alpha_g & \gamma_g & 1 & 0 \\
\alpha_g & \zeta_g & 0 & 1
\end{array}$

32.7	$A_{1g} \times T_{1g}$
A_{1g} T_{1g}	T_{1g}
α_g η_g	1 0 0
$ \alpha_g \mu_g \\ \alpha_g \nu_g $	$\begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
32.8	$A_{1g} \times T_{2g}$
A_{1g} T_{2g}	$\mid T_{2a}$
$\alpha_g \xi_g$	1 0 0
$ \alpha_g \phi_g \\ \alpha_g \chi_g $	$\begin{array}{c cccc} 0 & 1 & 0 \\ 0 & 0 & 1 \end{array}$
32.9	$A_{1g} \times T_{1u}$
A_{1g} T_{1u}	$\begin{array}{c cccc} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u & \end{array}$
$ \alpha_g \eta_u \\ \alpha_g \mu_u $	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
α_g ν_u	0 0 1
32.10	$A_{1g} \times T_{2u}$ $\mid T_{2u}$
A_{1g} T_{2u}	$\xi_u \phi_u \chi_u$
$ \alpha_g \xi_u \\ \alpha_g \phi_u \\ \alpha_g \chi_u $	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
	$A_{2u} \times A_{1q}$
	U
$\frac{A_{2u}}{\beta_u}$	$ \begin{array}{c c} A_{1g} & A_{2u} \\ A_{1g} & \beta_{u} \end{array} $ $ \begin{array}{c c} \alpha_{g} & 1 \end{array} $
	$A_{2u} \times A_{2u}$
$\frac{A_{2u}}{\beta_u}$	$ \begin{array}{c c} A_{1g} \\ A_{2u} & \alpha_g \end{array} $ $ \beta_u \mid 1$
	$A_{2u} \times A_{1u}$
$\frac{A_{2u}}{\beta_u}$	$ \begin{array}{c c} A_{1u} & A_{2g} \\ A_{1u} & \beta_g \\ \hline \alpha_u & 1 \end{array} $
	$A_{2u} \times A_{2g}$
A_{2n}	$A_{2a} \mid A_{1u}$
$\frac{-2u}{\beta_u}$	$ \begin{array}{c c} A_{1u} \\ A_{2g} & \alpha_u \\ \hline \beta_g & 1 \end{array} $
32.15	$A_{2u} \times E_u$
A_{2u} I	$E_u \mid E_g \ \gamma_g \ \zeta_g$
β_u β_u	$ \begin{array}{c cccc} E_u & E_g & \\ \gamma_g & \zeta_g & \\ \gamma_u & 1 & 0 \\ \xi_u & 0 & -1 \end{array} $
	$A_{2u} \times E_g$
	$\mid E_u \mid$
β_u	$ \begin{array}{c cccc} E_g & \gamma_u & \zeta_u \\ \gamma_g & 1 & 0 \\ E_g & 0 & -1 \end{array} $
,	·
32.17	$\mid T_{2n}$
$\begin{array}{cc} A_{2u} & T_{1g} \\ \hline \beta_u & \eta_g \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\beta_u \mu_g \\ \beta_u \nu_g$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
, 9	
32.18	$A_{2u} \times T_{2g}$
32.18	$\mid T_{1u}$
$egin{array}{cccc} egin{array}{ccccc} egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & \\ \xi_g & \phi_g & \chi_g \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{vmatrix} $
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & \\ \xi_g & \phi_g & \chi_g \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \end{aligned} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & 0 \end{vmatrix} $
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & & \\ \xi_g & \phi_g & \chi_g \\ \end{bmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $ $ A_{2u} \times T_{2u} $
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ 0 & 0 & 1 & \\ \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & \\ \xi_g & \phi_g & \chi_g \\ \end{bmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $ $ A_{2u} \times T_{2u} $ $ \begin{vmatrix} T_{1g} & & \\ \eta_g & \mu_g & \nu_g \\ \end{vmatrix} $
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ 0 & 0 & 1 & \\ \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & \\ \xi_g & \phi_g & \chi_g \\ \end{bmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $ $ A_{2u} \times T_{2u} $ $ \begin{vmatrix} T_{1g} & & \\ \eta_g & \mu_g & \nu_g \\ \end{vmatrix} $
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ 0 & 0 & 1 & \\ \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & \\ \xi_g & \phi_g & \chi_g \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $ $ A_{2u} \times T_{2u} $ $ \begin{vmatrix} T_{1g} & & \\ \eta_g & \mu_g & \nu_g \\ & & \\ \end{bmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ \end{bmatrix} $
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ 0 & 0 & 1 & \\ \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & \\ \xi_g & \phi_g & \chi_g \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & 1 & 0 & \\ 0 & 0 & 1 & \\ \end{vmatrix} $ $ A_{2u} \times T_{2u} $ $ \begin{vmatrix} T_{1g} & & \\ \eta_g & \mu_g & \nu_g \\ & & \\ 0 & & 1 & 0 \\ & & & \\ \end{vmatrix} $ $ \begin{vmatrix} 1 & 0 & 0 & \\ 0 & & 1 & 0 \\ & & & \\ 0 & & 0 & 1 \\ \end{vmatrix} $ $ A_{1u} \times A_{1g} $
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$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{vmatrix} T_{1u} & & & \\ \eta_u & \mu_u & \nu_u \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix} $ $ A_{2u} \times T_{1u} $ $ \begin{vmatrix} T_{2g} & & & \\ \xi_g & \phi_g & \chi_g \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix} $ $ A_{2u} \times T_{2u} $ $ \begin{vmatrix} T_{1g} & & & \\ \eta_g & \mu_g & \nu_g \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix} $ $ A_{1u} \times A_{1g} $ $ A_{1u} \times A_{1g} $ $ A_{1u} \times A_{2u} $ $ A_{2u} \begin{vmatrix} A_{1u} & & \\ A_{2u} & A_{2u} \\ & & & \\ \hline \beta_u & & 1 \end{vmatrix} $ $ A_{1u} \times A_{1u} $ $ A_{1u} \times A_{2u} $ $ A_{1u} \times A_{2u} $ $ A_{1u} \times A_{2g} $ $ A_{2u} \begin{vmatrix} A_{2g} & & \\ \beta_g & & \\ \hline \beta_u & & 1 \end{vmatrix} $ $ A_{1u} \times A_{2g} $ $ A_{2g} \begin{vmatrix} A_{2u} & & \\ \beta_u & & \\ \hline \beta_g & & 1 \end{vmatrix} $ $ A_{1u} \times E_u $ $ A_{2g} \begin{vmatrix} A_{2u} & & \\ \beta_u & & \\ \hline \beta_g & & 1 \end{vmatrix} $ $ A_{1u} \times E_u $ $ A_{2g} \begin{vmatrix} A_{2u} & & \\ \beta_u & & \\ \hline \beta_g & & 1 \end{vmatrix} $ $ A_{1u} \times E_u $ $ A_{2g} \begin{vmatrix} A_{2u} & & \\ \beta_u & & \\ \hline \beta_g & & 1 \end{vmatrix} $
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T_{2u}
A_{1u} T_{2g} ξ_u ϕ_u χ_u
$egin{array}{c ccc} lpha_u & \xi_g & 1 & 0 & 0 \ lpha_u & \phi_g & 0 & 1 & 0 \ \end{array}$
$\alpha_u \chi_g \mid 0 0 1$
32.29 $A_{1u} \times T_{1u}$
T_{1g}
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c ccccc} \alpha_u & \mu_u & 0 & 1 & 0 \\ \alpha_u & \nu_u & 0 & 0 & 1 \\ \end{array}$
$\alpha_u \nu_u \mid 0 0 1$
32.30 $A_{1u} \times T_{2u}$
$A_{1u} T_{2u} \mid T_{2g} \ \xi_g \phi_g \chi_g$
$\alpha_u \xi_u 1 0 0$
$ \begin{array}{c cccc} \alpha_u & \phi_u & 0 & 1 & 0 \\ \alpha_u & \chi_u & 0 & 0 & 1 \end{array} $
32.31 $A_{2a} \times A_{1a}$
<u>-</u> 9
$A_{2g} A_{1g} \mid egin{array}{c} A_{2g} \ eta_g \end{array}$
$eta_g lpha_g \mid 1$
32.32 $A_{2g} \times A_{2u}$
A.
$\begin{array}{c cccc} A_{2g} & A_{2u} & \alpha_u \\ \hline \beta_g & \beta_u & 1 \end{array}$
$ ho_g$ $ ho_u$ 1
32.33 $A_{2g} \times A_{1u}$
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$egin{array}{c c} A_{2g} & A_{1u} & A_{2u} \ \hline A_{g} & A_{u} & B_{u} \ \hline \end{array}$
32.34 $A_{2g} \times A_{2g}$
$egin{array}{c c} A_{2g} & A_{2g} & A_{1g} \ \hline \beta_g & eta_g & 1 \end{array}$
eta_g $egin{array}{c ccccccccccccccccccccccccccccccccccc$
$32.35 A_{2g} \times E_u$
$\begin{array}{c ccc} A_{2g} & E_u & E_u \\ \hline \beta_g & \gamma_u & 1 & 0 \\ \beta_g & \zeta_u & 0 & -1 \end{array}$
$\begin{array}{c cccc} \beta_g & \gamma_u & 1 & 0 \\ \beta_g & \zeta_u & 0 & -1 \end{array}$
$32.36 A_{2g} \times E_g$
A_{2g} $E_g \begin{vmatrix} E_g \\ \gamma_g & \zeta_g \end{vmatrix}$
$\begin{array}{c ccc} A_{2g} & E_g & E_g \\ \hline \beta_g & \gamma_g & \zeta_g \\ \hline \beta_g & \zeta_g & 0 & -1 \end{array}$
$32.37 A_{2g} \times T_{1g}$
$A_{2g} T_{1g} \mid egin{array}{c} T_{2g} \ \xi_g & \phi_g & \chi_g \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\beta_g \mu_g \mid 0 1 0$ $\beta_g \nu_g \mid 0 0 1$
32.38 $A_{2g} \times T_{2g}$
$\beta_a \xi_a \mid 1 0 0$
β_g ϕ_g 0 1 0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$
32.39 $A_{2g} \times T_{1u}$
32.39 $A_{2g} \times T_{1u}$ $A_{2g} T_{1u} \mid_{\xi_u}^{T_{2u}} \phi_u \chi_u$
32.39 $A_{2g} \times T_{1u}$ $\begin{array}{c ccccc} & T_{2u} & & \\ & T_{2u} & & \\ & \xi_u & \phi_u & \chi_u \\ \hline & \beta_g & \eta_u & 1 & 0 & 0 \\ & \beta_g & \mu_u & 0 & 1 & 0 \end{array}$
32.39 $A_{2g} \times T_{1u}$ $\begin{array}{c ccccc} & T_{2u} & & \\ A_{2g} & T_{1u} & \xi_{u} & \phi_{u} & \chi_{u} \\ \hline \beta_{g} & \eta_{u} & 1 & 0 & 0 \\ \beta_{g} & \mu_{u} & 0 & 1 & 0 \\ \beta_{g} & \nu_{u} & 0 & 0 & 1 \end{array}$
32.39 $A_{2g} \times T_{1u}$ $\begin{array}{c ccccc} & T_{2u} & & \\ & T_{2u} & & \\ & \xi_u & \phi_u & \chi_u \\ \hline & \beta_g & \eta_u & 1 & 0 & 0 \\ & \beta_g & \mu_u & 0 & 1 & 0 \end{array}$
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32.28 $A_{1u} \times T_{2g}$

$egin{array}{cccccccccccccccccccccccccccccccccccc$	$32.61 T_{1g} \times A_{1g}$	$32.73 T_{2g} \times A_{1u}$
$E_u T_{1g} \mid T_{1u} \qquad \qquad \mid T_{2u} \qquad \qquad \downarrow T$	T_{1g} A_{1g} $\left egin{array}{ccc} T_{1g} & & & & & & & \ \eta_g & \mu_g & u_g & & & & & \ \end{array} ight.$	T_{2g} A_{1u} $\left egin{array}{cc} T_{2u} \ \xi_u & \phi_u & \chi_u \end{array} ight.$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\eta_g = lpha_g ig 1 = 0 = 0$	$\xi_g \alpha_u \mid 1 0 0$
	$egin{array}{ c c c c c c c c c c c c c c c c c c c$	$egin{array}{ c c c c c c c c c c c c c c c c c c c$
$ \begin{vmatrix} \zeta_u & \eta_g & \frac{\sqrt{2}}{2} & 0 & 0 \\ \zeta_u & \mu_g & 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 & 0 \\ \end{vmatrix} \begin{vmatrix} \frac{\sqrt{2}}{2} & 0 & 0 \\ 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 \end{vmatrix} $		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$32.62 T_{1g} \times A_{2u}$	$32.74 T_{2g} \times A_{2g}$
32.48 $E_u \times T_{2g}$	T_{1g} A_{2u} $\left egin{array}{ccc} T_{2u} \ \xi_u & \phi_u & \chi_u \end{array} ight $	T_{2g} A_{2g} $\left egin{array}{ccc} T_{1g} & & & \ \eta_g & \mu_g & u_g & \end{array} ight.$
$E_u T_{2g} \mid \begin{array}{ccc} T_{1u} & & & & & & & & & & & & & & & \\ T_{2u} & & & & & & & & & & & & & & & & \\ E_u & T_{2g} \mid & & & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & & & \\ E_u & & & & & & & & & & & & & & \\ & & & & $	$\begin{array}{c ccccc} \hline \eta_g & \beta_u & 1 & 0 & 0 \\ \hline \mu_g & \beta_u & 0 & 1 & 0 \\ \hline \end{array}$	$\begin{array}{c ccccc} \hline \xi_g & \beta_g & 1 & 0 & 0 \\ \hline \phi_g & \beta_g & 0 & 1 & 0 \\ \hline \end{array}$
\sim ϵ $-\sqrt{2}$ 0 0 $\sqrt{2}$ 0 0	$egin{array}{c c c c c c c c c c c c c c c c c c c $	$egin{array}{c c c c c c c c c c c c c c c c c c c $
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	32.63 $T_{1g} \times A_{1u}$	$32.75 T_{2g} \times E_u$
$ \begin{vmatrix} \zeta_u & \xi_g \\ \zeta_u & \phi_g \\ \zeta_u & \chi_g \end{vmatrix} = \begin{vmatrix} \frac{\sqrt{2}}{2} & 0 & 0 \\ 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 \\ 0 & 0 & \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \end{vmatrix} = \begin{vmatrix} \frac{\sqrt{2}}{2} & 0 & 0 \\ 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 \\ 0 & 0 & \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \end{vmatrix} $	T_{1g} A_{1u} $\begin{vmatrix} T_{1u} \\ \eta_u & \mu_u & u_u \end{vmatrix}$	$T_{2g} E_u T_{1u} \qquad \qquad \qquad T_{2u} \qquad \qquad T_{2u} \qquad \qquad$
$egin{array}{cccccccccccccccccccccccccccccccccccc$	$egin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\phi_g \gamma_u = 0 -\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{3\sqrt{\frac{2}{3}}\sqrt{6}} 0 = 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{3\sqrt{\frac{2}{3}}\sqrt{6}} 0$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\textbf{32.64} T_{1g} \times A_{2g}$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	$egin{array}{c cccc} & T_{1g} & A_{2g} & T_{2g} \ \hline T_{g} & A_{g} & \xi_{g} & \phi_{g} & \chi_{g} \ \hline \eta_{g} & eta_{g} & 1 & 0 & 0 \ \hline \end{array}$	$32.76 T_{2g} \times E_g$
$\zeta_u = \mu_u = 0 = -\frac{\sqrt[3]{-1}\sqrt{2}}{2} = 0 = 0 = -\frac{\sqrt[3]{-1}\sqrt{2}}{2} = 0$	μ_g β_g \mid 0 1 0	
$\zeta_u \nu_u 0 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} 0 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	$ u_g \beta_g \mid 0 0 1 $	T_{2g} E_g η_g μ_g ν_g ξ_g ϕ_g χ_g
$32.50 E_u \times T_{2u}$	$32.65 T_{1g} \times E_u$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$E_u T_{2u} \left \begin{array}{ccc} T_{1g} & & & & & \\ \eta_g & & \mu_g & & \nu_g & \left \begin{array}{ccc} T_{2g} & & \\ \xi_g & & \phi_g & & \chi_g \end{array} \right $	T_{1g} E_u $\begin{vmatrix} T_{1u} & & & & & & & & & & & & & & & & & & &$	$ \begin{array}{c ccccc} \phi_g & \gamma_g & 0 & -\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} & 0 & 0 & 0 & \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} & 0 \\ \phi_g & \zeta_g & 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 & 0 & 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 \end{array} $
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
$\gamma_u \chi_u \mid 0 0 \frac{\sqrt{-1}\sqrt{2}}{2} \mid 0 0 -\frac{\sqrt{-1}\sqrt{2}}{2}$	$\eta_g \zeta_u \mid \frac{\sqrt{2}}{2} \qquad 0 \qquad \qquad 0 \qquad \mid \frac{\sqrt{2}}{2} \qquad \qquad 0 \qquad \qquad 0$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccc} \mu_g & \gamma_u & 0 & \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} & 0 & 0 & -\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} & 0 \\ \mu_g & \zeta_u & 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 & 0 & 0 & -\frac{\sqrt[3]{-1}\sqrt{2}}{2} & 0 \end{array}$	$\textbf{32.77} T_{2g} \times T_{1g}$
$\zeta_u \chi_u 0 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} 0 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	$\nu_g \gamma_u \mid 0 0 -\frac{\sqrt[3]{-1}\sqrt{2}}{2} \mid 0 0 \frac{\sqrt[3]{-1}\sqrt{2}}{2}$	
$32.51 E_g \times A_{1g}$	$\nu_g \zeta_u \mid 0 0 \frac{(-1)^3 \sqrt{2}}{2} \mid 0 0 \frac{(-1)^3 \sqrt{2}}{2}$	T_{2g} T_{1g} β_g γ_g ζ_g η_g μ_g ν_g ξ_g ϕ_g χ_g
$E_g A_{1g} \mid egin{array}{c} E_g \ \gamma_g & \zeta_g \end{array}$	$32.66 T_{1g} \times E_g$	$\xi_q \mu_q \mid 0 \mid 0 0 0 \frac{\sqrt{2}}{2} \mid 0 0 -\frac{\sqrt{2}}{2}$
$\frac{2g - \Omega_1 g + \eta g - \zeta g}{\gamma_g - \alpha_g + 1 = 0}$	T_{1g} E_g $\left egin{array}{cccc} T_{1g} & & & & & & & & & & & & & & & & & & &$	$\phi_q \eta_q \mid 0 \mid 0 0 0 \frac{\sqrt{2}}{2} \mid 0 0 \frac{\sqrt{2}}{2}$
$\zeta_g - \alpha_g \mid 0 - 1$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
32.52 $E_g \times A_{2u}$		
$E_g A_{2u} \mid egin{array}{cc} E_u & & & & & & & & & & & & & & & & & & &$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
$\begin{array}{c cccc} \gamma_g & \beta_u & 1 & 0 \\ \hline \zeta_g & \beta_u & 0 & -1 \end{array}$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\textbf{32.78} T_{2g} \times T_{2g}$
$32.53 E_g \times A_{1u}$	32.67 $T_{1g} \times T_{1g}$	T_{2g} T_{2g} α_g γ_g ζ_g η_g μ_g ν_g ξ_g ϕ_g χ_g
$E_g A_{1u} \mid E_u \qquad $	T_{1g} T_{1g} $\begin{vmatrix} A_{1g} \\ \alpha_g \end{vmatrix}$ $\begin{vmatrix} E_g \\ \gamma_g \end{vmatrix}$ ζ_g $\begin{vmatrix} T_{1g} \\ \eta_g \end{vmatrix}$ μ_g ν_g $\begin{vmatrix} T_{2g} \\ \xi_g \end{vmatrix}$ ϕ_g χ_g	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccc} \gamma_g & \alpha_u & 1 & 0 \\ \hline \zeta_g & \alpha_u & 0 & 1 \end{array}$	$\eta_q = \eta_q = \frac{\sqrt{3}}{3} = \frac{\sqrt{3}}{6} - \frac{i}{2} = \frac{\sqrt{3}}{6} - \frac{i}{2} = 0$ 0 0 0 0 0	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
$\textbf{32.54} E_g \times A_{2g}$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\phi_g \phi_g \frac{\sqrt{3}}{3} -\frac{\sqrt{3}}{6} + \frac{i}{2} \frac{\sqrt{3}}{3} 0 0 0 0 0$
$egin{array}{c c} E_g & A_{2g} & F_g \ \hline P_g & Q_g & Q_g \ \hline \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$egin{array}{c c c c} \gamma_g & eta_g & 1 & 0 \ \hline \zeta_g & eta_g & 0 & -1 \ \hline \end{array}$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
$32.55 E_g \times E_u$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{cccccccccccccccccccccccccccccccccccc$
$E_g E_u \begin{vmatrix} A_{1u} & A_{2u} & E_u \\ \alpha_u & \beta_u & \gamma_u & \zeta_u \end{vmatrix}$	32.68 $T_{1g} \times T_{2g}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\gamma_q \gamma_u \mid 0 \mid 0 \mid 0 1$	T_{1g} T_{2g} $\begin{vmatrix} A_{2g} \\ \beta_g \end{vmatrix}$ $\begin{vmatrix} E_g \\ \gamma_g \end{vmatrix}$ ζ_g $\begin{vmatrix} T_{1g} \\ \eta_g \end{vmatrix}$ μ_g ν_g $\begin{vmatrix} T_{2g} \\ \xi_g \end{vmatrix}$ ϕ_g χ_g	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\eta_g = \xi_g \left \frac{\sqrt{3}}{3} \right - \frac{\sqrt{3}}{6} - \frac{i}{2} \left \frac{\sqrt{3}}{6} + \frac{i}{2} \right 0 = 0 = 0 = 0$	$\xi_g \nu_u \mid 0 \mid 0 0 0 \frac{\sqrt{2}}{2} 0 \mid 0 \frac{\sqrt{2}}{2} 0$
$ \begin{array}{c c c} \zeta_g & \gamma_u & \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} & 0 & 0\\ \zeta_g & \zeta_u & 0 & 0 & 1 & 0 \end{array} $	$egin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$32.56 E_g \times E_g$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
E_g E_g $\begin{vmatrix} A_{2g} & A_{1g} & E_g \\ \beta_g & \alpha_g & \gamma_g & \zeta_g \end{vmatrix}$	$\mu_g \chi_g \mid 0 \mid 0 0 \left \frac{\sqrt{2}}{2} 0 0 \mid -\frac{\sqrt{2}}{2} 0 0 \right $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$32.80 T_{2g} \times T_{2u}$
	32.69 $T_{1g} \times T_{1u}$	$ T_{2g} T_{2u} \begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix} E_u \qquad \begin{vmatrix} T_{1u} \\ \gamma_u \end{vmatrix} \mu_u \nu_u \begin{vmatrix} T_{2u} \\ \xi_u & \phi_u & \chi_u \end{vmatrix} $
$egin{array}{cccccccccccccccccccccccccccccccccccc$	T_{1g} T_{1u} $\begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix}$ $\begin{vmatrix} E_u \\ \gamma_u \end{vmatrix}$ $\begin{vmatrix} T_{1u} \\ \gamma_u \end{vmatrix}$ $\begin{vmatrix} T_{1u} \\ \eta_u \end{vmatrix}$ $\begin{vmatrix} T_{2u} \\ \xi_u \end{vmatrix}$ $\begin{vmatrix} T_{2u} \\ \xi_u \end{vmatrix}$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
E_g T_{1g} η_g μ_g U_g T_{2g} T_{2	$\eta_q = \eta_u = \frac{\sqrt{3}}{3} = -\frac{\sqrt{3}}{6} - \frac{i}{2} = -\frac{\sqrt{3}}{6} - \frac{i}{2} = 0$ 0 0 0 0 0	$\xi_g \chi_u \mid 0 \mid 0 0 0 \frac{\sqrt{2}}{2} 0 0 \frac{\sqrt{2}}{2} 0$
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
γ_g ν_g 0 0 $-\frac{\sqrt{-1}\sqrt{2}}{2}$ 0 0 $\frac{\sqrt{-1}\sqrt{2}}{2}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\phi_g \chi_u \mid 0 \mid 0 0 \left -\frac{\sqrt{2}}{2} 0 0 \right \frac{\sqrt{2}}{2} 0 0$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\mu_g \nu_u \mid 0 \mid 0 0 \left -\frac{\sqrt{2}}{2} 0 0 \right \frac{\sqrt{2}}{2} 0 0$	$\chi_g \phi_u 0 0 \frac{\sqrt{2}}{2} 0 0 \frac{\sqrt{2}}{2} 0 0$
$\zeta_g \nu_g \mid 0 \qquad 0 \qquad \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} \mid 0 \qquad 0 \qquad \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	$egin{array}{c c c c c c c c c c c c c c c c c c c $	$\chi_g \chi_u \mid \frac{\sqrt{3}}{3} \mid \frac{\sqrt{3}}{3} -\frac{\sqrt{3}}{6} + \frac{i}{2} \mid 0 0 0 0 0$
32.58 $E_g \times T_{2g}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	32.81 $T_{1u} \times A_{1g}$
$E_g T_{2g} \mid egin{array}{cccc} T_{1g} & & & & & & & & & & & & & & & & & & &$	32.70 $T_{1g} \times T_{2u}$	T_{1u} $A_{1g} \left egin{array}{ll} T_{1u} & & & \ \eta_u & \mu_u & u_u \end{array} ight.$
$\gamma_a = \xi_a - \frac{\sqrt{2}}{2} = 0 = 0 = \frac{\sqrt{2}}{2} = 0 = 0$	$A_{2u} \mid E_u \mid T_{1u} \mid T_{2u}$	$\overline{\eta_u - lpha_g \mid 1 = 0 = 0}$
$\gamma_g \chi_g \mid 0 0 \frac{\sqrt{1\sqrt{2}}}{2} \mid 0 0 -\frac{\sqrt{1\sqrt{2}}}{2}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c c c c c} \mu_u & lpha_g & 0 & 1 & 0 \\ \hline u_u & lpha_g & 0 & 0 & 1 \\ \hline \end{array}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c c c c c c c c c c c c c c c c c c c $	
$\zeta_g \chi_g 0 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2} 0 0 \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$		$32.82 T_{1u} \times A_{2u}$
32.59 $E_g \times T_{1u}$	$\mu_g \chi_u \mid \begin{array}{ccccccccccccccccccccccccccccccccccc$	T_{1u} A_{2u} $\begin{vmatrix} T_{2g} \\ \xi_g & \phi_g & \chi_g \end{vmatrix}$
$E_g T_{1u} \mid T_{1u} \qquad \qquad \qquad \mid T_{2u} \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \downarrow \qquad \qquad \downarrow \qquad \qquad \downarrow \qquad \qquad \downarrow \qquad \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \qquad \qquad \qquad \downarrow \qquad \qquad$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$egin{array}{c c c c c c c c c c c c c c c c c c c $
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ u_u \beta_u 0 0 1 $
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\textbf{32.71} T_{2g} \times A_{1g}$	32.83 $T_{1u} \times A_{1u}$
$\zeta_g \eta_u \mid \frac{\sqrt{2}}{2} 0 0 \mid \frac{\sqrt{2}}{2} 0 0$	T_{2g} A_{1g} $\left egin{array}{ccc} T_{2g} & & & \ & \xi_g & \phi_g & \chi_g \end{array} ight $	$\mid T_{1g}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\xi_g \alpha_g \mid 1 0 0$	$egin{array}{c c c c c c c c c c c c c c c c c c c $
$32.60 E_g \times T_{2u}$	$egin{array}{c c c c} \hline \phi_g & lpha_g & 0 & 1 & 0 \\ \hline \chi_g & lpha_g & 0 & 0 & 1 \\ \hline \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
E_g T_{2u} $\begin{vmatrix} T_{1u} & & & & & & & & & & & & & & & & & & &$		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	32.72 $T_{2g} \times A_{2u}$	32.84 $T_{1u} \times A_{2g}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	T_{2g} A_{2u} $\left egin{array}{ccc} T_{1u} & & & & & & & & & & & & & & & & & & &$	$T_{1u} A_{2g} \left \begin{array}{cc} T_{2u} \\ \xi_u & \phi_u & \chi_u \end{array} \right.$
$\zeta_g \xi_u \frac{\sqrt{2}}{2} 0 0 \frac{\sqrt{2}}{2} 0 0$	$\xi_g \beta_u \mid 1 0 0$	η_u β_g 1 0 0
7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c ccccccccccccccccccccccccccccccccccc$	$egin{array}{c ccccccccccccccccccccccccccccccccccc$

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32.61 $T_{1g} \times A_{1g}$

32.73 $T_{2g} \times A_{1u}$

32.47 $E_u \times T_{1g}$

32.85 $T_{1u} \times E_u$

		T_{1g}			T_{2g}		
T_{1u}	E_u	η_g	μ_g	$ u_g$	ξ_g	ϕ_g	χ_g
η_u	γ_u	$\frac{\sqrt{2}}{2}$	0	0	$-\frac{\sqrt{2}}{2}$	0	0
η_u	ζ_u	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0	0
μ_u	γ_u	0	$\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	0	0	$-\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	0
μ_u	ζ_u	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0
ν_u	γ_u	0	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0	0	$\frac{\sqrt[3]{-1}\sqrt{2}}{2}$
.,	<i>-</i>	0	0	$-\frac{2}{(-1)^{\frac{2}{3}}\sqrt{2}}$	0	0	$(-1)^{\frac{2}{3}}\sqrt{2}$

32.86 $T_{1u} \times E_g$

T_{1u}	E_g	$T_{1u} \\ \eta_u$	μ_u	$ u_u$	$\begin{array}{ c c } T_{2u} \\ \xi_u \end{array}$	ϕ_u	χ_u
$\eta_u \ \eta_u$	γ_g ζ_g	$\frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}$	0 0	0 0	$-\frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}$	0 0	0 0
μ_u μ_u	γ_g ζ_g	0	$-\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{\frac{\sqrt{2}}{2}}$	0	0 0	$-\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{-\frac{\sqrt[3]{-1}\sqrt{2}}{2}}$	0
$ u_u $ $ \nu_u$	γ_g ζ_g	0	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2} \\ \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	0	0	$\frac{\sqrt[3]{-1}\sqrt{2}}{2} \\ \frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$

32.87 $T_{1u} \times T_{1g}$

T_{1u}	C	$\begin{vmatrix} A_{1u} \\ \alpha_u \end{vmatrix}$	E_u γ_u	ζ_u	$T_{1u} \\ \eta_u$	μ_u	$ u_u$	$\begin{array}{c c} T_{2u} \\ \xi_u \end{array}$	ϕ_u	χ_u
η_u η_u η_u	$egin{array}{c c} \eta_g & = & & & & & & & & & & & & & & & & & $	$ \begin{array}{c c} \sqrt{3} \\ 3 \\ 0 \\ 0 \end{array} $	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	0 0 0	$0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$0 \\ \frac{\sqrt{2}}{2} \\ 0$
μ_u μ_u μ_u	$egin{array}{c c} \eta_g & & & & & & & & & & & & & & & & & & &$	$\begin{bmatrix} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{bmatrix}$	$ \begin{array}{c} 0 \\ -\frac{\sqrt{3}}{6} + \frac{i}{2} \\ 0 \end{array} $	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$\begin{vmatrix} 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$\begin{array}{ c c } 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
$ u_u $ $ \nu_u $	$\eta_g \mid \mu_g \mid \nu_g \mid \frac{1}{2}$	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{2} \end{bmatrix}$	$0 \\ 0 \\ \frac{\sqrt{3}}{2}$	$0 \\ 0 \\ -\frac{\sqrt{3}}{3} + \frac{i}{2}$	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0

32.88 $T_{1u} \times T_{2g}$

		A_{2u}	E_u		T_{1u}			T_{2u}		
T_{1u}	T_{2g}	β_u	γ_u	ζ_u	η_u	μ_u	ν_u	ξ_u	ϕ_u	χ_u
η_u	ξ_g	$\frac{\sqrt{3}}{3}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$	$\frac{\sqrt{3}}{6} + \frac{i}{2}$	0	0	0	0	0	0
η_u	ϕ_g	0	0	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$-\frac{\sqrt{2}}{2}$
η_u	χ_g	0	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0
μ_u	ξ_g	0	0	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$
μ_u	ϕ_g	$\frac{\sqrt{3}}{3}$	$-\frac{\sqrt{3}}{6} + \frac{i}{2}$	$-\frac{\sqrt{3}}{3}$	0	0	0	0	0	0
μ_u	χ_g	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$-\frac{\sqrt{2}}{2}$	0	0
ν_u	ξ_g	0	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$-\frac{\sqrt{2}}{2}$	0
ν_u	ϕ_g	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0	0
ν_u	χ_g	$\frac{\sqrt{3}}{3}$	$\frac{\sqrt{3}}{3}$	$\frac{\sqrt{3}}{6} - \frac{i}{2}$	0	0	0	0	0	0

32.89 $T_{1u} \times T_{1u}$

$32.89 T_{1u} \times T_{1u}$										
T_{1u}	T_{1u}	$\begin{vmatrix} A_{1g} \\ \alpha_g \end{vmatrix}$	$E_g \ \gamma_g$	ζ_g	$T_{1g} \\ \eta_g$	μ_g	$ u_g$	$\begin{array}{c c} T_{2g} \\ \xi_g \end{array}$	ϕ_g	χ_g
η_u η_u η_u	η_u μ_u $ u$	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	0 0 0	$0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$0\\ \frac{\sqrt{2}}{2}\\ 0$
$\mu_u \\ \mu_u \\ \mu_u$	η_u μ_u ν_u	$\begin{bmatrix} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{bmatrix}$	$0\\ -\frac{\sqrt{3}}{6} + \frac{i}{2}\\ 0$	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$0 \\ 0 \\ -\frac{\sqrt{2}}{2}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$\begin{array}{ c c } 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
$ u_u $ $ \nu_u $ $ \nu_u $	$ \eta_u $ $ \mu_u $ $ \nu_u $	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$0 \\ 0 \\ \frac{\sqrt{3}}{3}$	$0 \\ 0 \\ -\frac{\sqrt{3}}{6} + \frac{i}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0

32.90 $T_{1u} \times T_{2u}$

T_{1u}	T_{2u}	$\begin{array}{c} A_{2g} \\ \beta_g \end{array}$	$E_g \\ \gamma_g$	ζ_g	$\left \begin{array}{c} T_{1g} \\ \eta_g \end{array} \right $	μ_g	$ u_g$	T_{2g} ξ_g	ϕ_g	χ_g
η_u η_u η_u	$ \xi_u \\ \phi_u \\ \chi_u $	$\begin{array}{c c} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{array}$	$\begin{vmatrix} -\frac{\sqrt{3}}{6} - \frac{i}{2} \\ 0 \\ 0 \end{vmatrix}$	$\frac{\sqrt{3}}{6} + \frac{i}{2}$ 0 0	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$
$\mu_u \ \mu_u \ \mu_u$	$ \xi_u \\ \phi_u \\ \chi_u $	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$\begin{bmatrix} 0\\ -\frac{\sqrt{3}}{6} + \frac{i}{2}\\ 0 \end{bmatrix}$	$0\\ -\frac{\sqrt{3}}{3}\\ 0$	$ \begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array} $	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$0 \\ -\frac{\sqrt{2}}{2}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
$ \begin{array}{c} \nu_u \\ \nu_u \\ \nu_u \end{array} $	ξ_u ϕ_u χ_u	$\begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	$\begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	0 0 $\frac{\sqrt{3}}{6} - \frac{i}{2}$	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0	$0\\ \frac{\sqrt{2}}{2}\\ 0$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0

32.91 $T_{2u} \times A_{1g}$

T_{2u}	A_{1g}	$\begin{array}{c c} T_{2u} \\ \xi_u \end{array}$	ϕ_u	χ_u
ξ_u	α_g	1	0	0
ϕ_u	α_g	0	1	0
37	01	lο	Ω	1

32.92 $T_{2u} \times A_{2u}$

T_{2u}	A_{2u}	$T_{1g} \\ \eta_g$	μ_g	$ u_q$
ξ_u	β_u	1	0	0
ϕ_u	β_u	0	1	0
ν	В	l 0	0	1

32.93 $T_{2u} \times A_{1u}$

T_{2u}	A_{1u}	T_{2g} ξ_g	ϕ_g	χ_g
ξ_u	α_u		0	0
ϕ_u	α_u	0	1	0
χ_u	α_u	0	0	1

32.94 $T_{2u} \times A_{2g}$

	A_{2g}	T_{1u}		
T_{2u}	A_{2g}	η_u	μ_u	ν_u
ξ_u	β_g	1	0	0
ϕ_u	β_g	0	1	0
χ_u	β_g	0	0	1

32.95 $T_{2u} \times E_u$

T_{2u}	E_u	$T_{1g} \\ \eta_g$	μ_g	$ u_g$	T_{2g} ξ_g	ϕ_g	χ_g
ξ_u ξ_u	γ_u ζ_u	$-\frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}$	0 0	0 0	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{array}$	0	0 0
ϕ_u ϕ_u	γ_u ζ_u	0 0	$-\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{-\frac{\sqrt[3]{-1}\sqrt{2}}{2}}$	0 0	0 0	$\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{-\frac{\sqrt[3]{-1}\sqrt{2}}{2}}$	0
χ_u	γ_u	0	0	$\frac{\sqrt[3]{-1}\sqrt{2}}{2} \\ (-1)^{\frac{2}{3}}\sqrt{2}$	0	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2} \\ (-1)^{\frac{2}{3}}\sqrt{2}$

32.96 $T_{2u} \times E_g$

		T_{1u}			T_{2u}		
T_{2u}	E_g	η_u	μ_u	$ u_u$	ξ_u	ϕ_u	χ_u
ξ_u	γ_g	$-\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0	0
ξ_u	ζ_g	$\frac{\sqrt{2}}{2}$	0	0	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{array}$	0	0
ϕ_u	γ_g	0	$-\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	0	0	$\frac{(-1)^{\frac{2}{3}}\sqrt{2}}{2}$	0
ϕ_u	ζ_g	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0
χ_u	γ_g	0	0	$\frac{\sqrt[3]{-1}\sqrt{2}}{2}$	0	0	$-\frac{\sqrt[3]{-1}\sqrt{2}}{2}$
27	<i>-</i>	0	0	$\frac{2}{(-1)^{\frac{2}{3}}\sqrt{2}}$	0	0	$(-1)^{\frac{2}{3}}\sqrt{2}$

32.97 $T_{2u} \times T_{1g}$

T_{2u}	T_{1g}	$\begin{array}{c} A_{2u} \\ \beta_u \end{array}$	E_u γ_u	ζ_u	$\begin{array}{ c c } T_{1u} \\ \eta_u \end{array}$	μ_u	$ u_u$	T_{2u} ξ_u	ϕ_u	χ_u
ξ_u ξ_u ξ_u	η_g μ_g $ u_g$	$\begin{array}{c c} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{array}$	$ \begin{vmatrix} -\frac{\sqrt{3}}{6} - \frac{i}{2} \\ 0 \\ 0 $	$\frac{\frac{\sqrt{3}}{6} + \frac{i}{2}}{0}$ 0	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$\begin{array}{c c} 0\\ \frac{\sqrt{2}}{2}\\ 0\end{array}$	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$
$\phi_u \\ \phi_u \\ \phi_u$	$\eta_g \ \mu_g \ u_g$	$\begin{array}{c c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$ \begin{array}{c} 0 \\ -\frac{\sqrt{3}}{6} + \frac{i}{2} \\ 0 \end{array} $	$0\\ -\frac{\sqrt{3}}{3}\\ 0$	$\begin{array}{ c c } 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array}$	0 0 0	$\begin{array}{c c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	$0 \\ 0 \\ -\frac{\sqrt{2}}{2}$	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
$\begin{array}{c} \chi_u \\ \chi_u \\ \chi_u \end{array}$	η_g μ_g $ u_g$	$\begin{array}{c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	$0 \\ 0 \\ \frac{\sqrt{3}}{3}$	0 0 $\frac{\sqrt{3}}{6} - \frac{i}{2}$	$ \begin{array}{c c} 0 \\ \frac{\sqrt{2}}{2} \\ 0 \end{array} $	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0	$0 \\ \frac{\sqrt{2}}{2} \\ 0$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0

32.98 $T_{2u} \times T_{2g}$

T_{2u}	T_{2g}	A_{1u} α_u	$E_u \\ \gamma_u$	ζ_u	T_{1u} η_u	μ_u	$ u_u$	$\begin{array}{c c} T_{2u} \\ \xi_u \end{array}$	ϕ_u	χ_u
ξ_u ξ_u ξ_u	ξ_g ϕ_g χ_g	$\begin{array}{c} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{array}$	$\begin{vmatrix} -\frac{\sqrt{3}}{6} - \frac{i}{2} \\ 0 \\ 0 \end{vmatrix}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	0 0 0	$0 \\ \frac{\sqrt{2}}{2}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$	0 0 0	$0 \\ 0 \\ \frac{\sqrt{2}}{2}$	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$
$ \phi_u \\ \phi_u \\ \phi_u $	$\xi_g \ \phi_g \ \chi_g$	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$\begin{vmatrix} 0\\ -\frac{\sqrt{3}}{6} + \frac{i}{2}\\ 0 \end{vmatrix}$	$0\\ \frac{\sqrt{3}}{3}\\ 0$	$\begin{vmatrix} 0 \\ 0 \\ -\frac{\sqrt{2}}{2} \end{vmatrix}$	0 0 0	$ \begin{array}{c} \sqrt{2} \\ 2 \\ 0 \\ 0 \end{array} $	$ \begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array} $	0 0 0	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$
$\begin{array}{c} \chi_u \\ \chi_u \\ \chi_u \end{array}$	ξ_g ϕ_g χ_g	$0 \\ 0 \\ \frac{\sqrt{3}}{3}$	$\begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{array}$	0 0 $-\frac{\sqrt{3}}{6} + \frac{i}{2}$	$\begin{bmatrix} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{bmatrix}$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0	$\begin{array}{c c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0

32.99 $T_{2u} \times T_{1u}$

T_{2u}	T_{1u}	$\begin{vmatrix} A_{2g} \\ \beta_g \end{vmatrix}$	E_g γ_g	ζ_g	$\begin{array}{ c c } T_{1g} \\ \eta_g \end{array}$	μ_g	$ u_g$	$T_{2g} \xi_g$	ϕ_g	χ_g
ξ_u ξ_u ξ_u	$\eta_u \ \mu_u \ u_u$	$\begin{bmatrix} \frac{\sqrt{3}}{3} \\ 0 \\ 0 \end{bmatrix}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$ 0 0	$\frac{\sqrt{3}}{6} + \frac{i}{2}$ 0 0	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$\begin{array}{c c} 0\\ \frac{\sqrt{2}}{2}\\ 0\end{array}$	0 0 0	$0 \\ \frac{0}{\sqrt{2}}$	$0\\ -\frac{\sqrt{2}}{2}\\ 0$
$\phi_u \\ \phi_u \\ \phi_u$	$\eta_u \ \mu_u \ u_u$	$\begin{array}{c} 0\\ \frac{\sqrt{3}}{3}\\ 0 \end{array}$	$0\\ -\frac{\sqrt{3}}{6} + \frac{i}{2}\\ 0$	$0\\ -\frac{\sqrt{3}}{3}\\ 0$	$\begin{array}{c c} 0 \\ 0 \\ \frac{\sqrt{2}}{2} \end{array}$	0 0 0	$\begin{bmatrix} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{bmatrix}$	$0 \\ -\frac{\sqrt{2}}{2}$	0 0 0	$ \begin{array}{c} \sqrt{2} \\ 2 \\ 0 \\ 0 \end{array} $
$\begin{array}{c} \chi_u \\ \chi_u \\ \chi_u \end{array}$	η_u μ_u ν_u	$\begin{bmatrix} 0 \\ 0 \\ \frac{\sqrt{3}}{3} \end{bmatrix}$	$0 \\ 0 \\ \frac{\sqrt{3}}{3}$	$0 \\ 0 \\ \frac{\sqrt{3}}{6} - \frac{i}{2}$	$\begin{array}{c c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$\begin{array}{c} \frac{\sqrt{2}}{2} \\ 0 \\ 0 \end{array}$	0 0 0	$\begin{array}{c} 0\\ \frac{\sqrt{2}}{2}\\ 0 \end{array}$	$-\frac{\sqrt{2}}{2}$ 0 0	0 0 0

32.100 $T_{2u} \times T_{2u}$

		A_{1g}	E_g		T_{1g}			T_{2g}		
T_{2u}	T_{2u}	α_g	γ_g	ζ_g	η_g	μ_g	$ u_g$	ξ_g	ϕ_g	χ_g
ξ_u	ξ_u	$\frac{\sqrt{3}}{3}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$	$-\frac{\sqrt{3}}{6} - \frac{i}{2}$	0	0	0	0	0	0
ξ_u	ϕ_u	0	0	0	0	0	$-\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$
ξ_u	χ_u	0	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0
ϕ_u	ξ_u	0	0	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$
ϕ_u	ϕ_u	$\frac{\sqrt{3}}{3}$	$-\frac{\sqrt{3}}{6} + \frac{i}{2}$	$\frac{\sqrt{3}}{3}$	0	0	0	0	0	0
ϕ_u	χ_u	0	0	0	$-\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0	0
χ_u	ξ_u	0	0	0	0	$-\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0
χ_u	ϕ_u	0	0	0	$\frac{\sqrt{2}}{2}$	0	0	$\frac{\sqrt{2}}{2}$	0	0
2.4	2.4	$\sqrt{3}$	$\sqrt{3}$	$\sqrt{3}$ i	0	0	0	0	0	0