Tables of Clebsch–Gordan Coefficients of SU$_3$

P. McNAMEE, S. J.* and FRANK CHILTON†

Institute of Theoretical Physics, Department of Physics, Stanford University, Stanford, California

INTRODUCTION

The group SU$_3$ has lately been of considerable interest in regard to the description of elementary particle symmetries.[1,2] Especially a crucial experiment, the finding of the Ω^-, seems indicative of the relevance of SU$_3$.[3]

Our original motivation in compiling these tables of the Clebsch–Gordan coefficients of SU$_3$ resulted from the observation that many of our calculations on elementary particle processes which required some labor, if attacked directly using tensorial or projection operator methods, turned out to be almost trivial if one had already a complete set of tables of the Clebsch–Gordan coefficients. For this reason, and since there are no other publicly circulated tables, we publish our tables here, hopefully in a form which permits efficient use. Our purpose in the discussion below is just to present the tables with a summary of the important properties of the coefficients necessary to using the tables. For a more detailed discussion of the properties of the Clebsch–Gordan coefficients of SU$_3$ see the review of de Swart.[4]

TABLES

These tables were constructed primarily from the isoscalar factors given by de Swart.[4,5] The tables were extensively checked using the fact that each submatrix is unitary. The **8**⊗**8** tables were also checked against a table constructed by Oakes[6] using tensorial methods. Spot checks were also made using U-spin and V-spin operators.

Our states are labeled in conformance with the usage of SU$_3$ as an elementary particle symmetry,

$$|\mathbf{N}, Y, I, I_3\rangle,$$

where **N** = dimension of the representation, Y = hypercharge, I = total isospin, $I_3 = Z$ component of isospin. The tables are in the form

	N ···
	Y ···
	I ···
$n \otimes n'$	I_3 ···
$y\ i\ i_3\ y'\ i'\ i_3'$	

and each entry is the (Clebsch–Gordan) coefficient for the decomposition of $|\mathbf{N}, Y, I, I_3\rangle$ into $|\mathbf{n}\ y\ i\ i_3\rangle \otimes |\mathbf{n}'\ y'\ i'\ i_3'\rangle$. Tables are presented here for the following Clebsch-Gordan series

Table II: $\mathbf{8}\otimes\mathbf{8}=\mathbf{27}\oplus\mathbf{10}\oplus\overline{\mathbf{10}}\oplus\mathbf{8}\oplus\mathbf{8}'\oplus\mathbf{1}$

Table III: $\mathbf{8}\otimes\mathbf{10}=\mathbf{35}\oplus\mathbf{27}\oplus\mathbf{10}\oplus\mathbf{8}$

Table IV: $\mathbf{8}\otimes\mathbf{27}=\mathbf{64}\oplus\mathbf{35}\oplus\overline{\mathbf{35}}\oplus\mathbf{27}\oplus\mathbf{27}'\oplus\mathbf{10}\oplus\overline{\mathbf{10}}\oplus\mathbf{8}$

Table V: $\mathbf{10}\otimes\overline{\mathbf{10}}=\mathbf{64}\oplus\mathbf{27}\oplus\mathbf{8}\oplus\mathbf{1}$.

Where there are two representations, e.g., **8** and **8′**, in an outer product we have distinguished them, as is conventional, by R symmetry.[1]

SYMMETRY PROPERTIES

The complex conjugate of a state can be determined from

$$|\mathbf{N}\ Y\ I\ I_3\rangle = (-1)^{I_3+Y/2}\,|\overline{\mathbf{N}}\ -Y\ I\ -I_3\rangle.$$

Often, e.g., in calculating crossing-matrices, one is interested in the Clebsch–Gordan coefficient with the states in reversed order. This reversal of order introduces a sign of ± 1. Table I lists the relevant signs.

TABLE I. Appropriate signs for reversal of order of the states.

n⊗n′ \ N	1	8	8′	10	$\overline{10}$	27	27′	35	$\overline{35}$	64
8⊗**8**	1	1	−1	−1	−1	1				
8⊗**10**		1		−1		−1		1		
8⊗**27**		1		1	1	1	−1	−1	−1	1
10⊗$\overline{\mathbf{10}}$	−1	1				−1				1

* National Science Foundation Predoctoral Fellow.

† This work was supported in part by the U. S. Air Force through Air Force Office of Scientific Research Contract AF 49(638)-1389.

[1] For a discussion of the relevance of SU$_3$ to elementary particle symmetries see M. Gell-Mann, California Institute of Technology Report, CTSL-20 (unpublished) and Phys. Rev. **125**, 1067 (1962); Y. Ne'eman, Nucl. Phys. **26**, 222 (1961).

[2] For a review of the properties of Lie groups aimed at their use in elementary particle symmetries see R. E. Behrends, J. Dreitlein, C. Fronsdal, and B. W. Lee, Rev. Mod. Phys. **34**, 1 (1962).

[3] V. E. Barnes, P. I. Connolly, D. J. Crennell, B. B. Culwick, W. C. Delaney, *et al.*, Phys. Rev. Letters **12**, 204 (1964).

[4] J. J. de Swart, Rev. Mod. Phys. **35**, 916 (1963). In preparing our tables, three misprints in de Swart's tables were found and corrected.

[5] There are other tables of isoscalar factors available, to mention: A. R. Edwards, Proc. Roy. Soc. (London) **A268**, 567 (1962); M. A. Rashid, Nuovo Cimento **26**, 118 (1962); Y. Dothan and H. Harari, Israel Atomic Energy Commission Report IA-777 (unpublished). The reader should be warned of the fact that conventions for SU$_3$ are not yet standardized and none of the sets of conventions in Refs. 4 and 5 entirely agree.

[6] R. J. Oakes (private communication).

TABLE II. Clebsch–Gordan coefficients for $8\otimes 8$.

Form:

$8\otimes 8$	N Y I I_3
$y\ i\ i_3$ $\quad y'\ i'\ i_3'$	

$8\otimes 8$	27 (2, 1, 1)
1 ½ ½ 1 ½ ½	1

$8\otimes 8$	27 (2, 1, 0)	$\overline{10}$ (2, 0, 0)
1 ½ ½ 1 ½ -½	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$
1 ½ -½ 1 ½ ½	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$

$8\otimes 8$	27 (2, 1, -1)
1 ½ -½ 1 ½ -½	1

$8\otimes 8$	27 (1, $\frac{3}{2}$, $\frac{3}{2}$)	10 (1, $\frac{3}{2}$, $\frac{3}{2}$)
1 ½ ½ 0 1 1	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$
0 1 1 1 ½ ½	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$

$8\otimes 8$	27 (1, $\frac{3}{2}$, $\frac{1}{2}$)	10 (1, $\frac{3}{2}$, $\frac{1}{2}$)	27 (1, $\frac{1}{2}$, $\frac{1}{2}$)	$\overline{10}$ (1, $\frac{1}{2}$, $\frac{1}{2}$)	8 (1, $\frac{1}{2}$, $\frac{1}{2}$)	8′ (1, $\frac{1}{2}$, $\frac{1}{2}$)
1 ½ ½ 0 1 0	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{60}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{3}{20}}$	$\sqrt{\frac{1}{12}}$
1 ½ ½ 0 0 0	0	0	$\sqrt{\frac{9}{20}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{4}}$
1 ½ -½ 0 1 1	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{6}}$
0 1 1 1 ½ -½	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{6}}$
0 1 0 1 ½ ½	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{60}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{3}{20}}$	$-\sqrt{\frac{1}{12}}$
0 0 0 1 ½ ½	0	0	$\sqrt{\frac{9}{20}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{4}}$

$8\otimes 8$	27 (1, $\frac{3}{2}$, $-\frac{1}{2}$)	10 (1, $\frac{3}{2}$, $-\frac{1}{2}$)	27 (1, $\frac{1}{2}$, $-\frac{1}{2}$)	$\overline{10}$ (1, $\frac{1}{2}$, $-\frac{1}{2}$)	8 (1, $\frac{1}{2}$, $-\frac{1}{2}$)	8′ (1, $\frac{1}{2}$, $-\frac{1}{2}$)
1 ½ ½ 0 1 -1	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{6}}$
1 ½ -½ 0 1 0	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{60}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$-\sqrt{\frac{1}{12}}$
1 ½ -½ 0 0 0	0	0	$\sqrt{\frac{9}{20}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{4}}$
0 1 0 1 ½ -½	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{60}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$\sqrt{\frac{1}{12}}$
0 1 -1 1 ½ ½	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{6}}$
0 0 0 1 ½ -½	0	0	$\sqrt{\frac{9}{20}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{4}}$

$8\otimes 8$	27 (1, $\frac{3}{2}$, $-\frac{3}{2}$)	10 (1, $\frac{3}{2}$, $-\frac{3}{2}$)
1 ½ -½ 0 1 -1	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$
0 1 -1 1 ½ -½	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$

Table II (*Continued*)

$8 \otimes 8$	27 0 2 2
0 1 1 0 1 1	1

	27 0 2 1	27 0 1 1	10 0 1 1	$\overline{10}$ 0 1 1	8 0 1 1	8' 0 1 1
1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{6}}$
0 1 1 0 1 0	$\sqrt{\frac{1}{2}}$	0	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0	$\sqrt{\frac{1}{3}}$
0 1 1 0 0 0	0	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{5}}$	0
0 1 0 0 1 1	$\sqrt{\frac{1}{2}}$	0	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0	$-\sqrt{\frac{1}{3}}$
0 0 0 0 1 1	0	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{5}}$	0
-1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{6}}$

	27 0 2 0	27 0 1 0	10 0 1 0	$\overline{10}$ 0 1 0	8 0 1 0	8' 0 1 0	27 0 0 0	8 0 0 0	8' 0 0 0	1 0 0 0
1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{3}{40}}$	$\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{8}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{40}}$	$-\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{8}}$
0 1 1 0 1 -1	$\sqrt{\frac{1}{6}}$	0	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{120}}$	$-\sqrt{\frac{1}{5}}$	0	$\sqrt{\frac{1}{8}}$
0 1 0 0 1 0	$\sqrt{\frac{2}{3}}$	0	0	0	0	0	$\sqrt{\frac{1}{120}}$	$\sqrt{\frac{1}{5}}$	0	$-\sqrt{\frac{1}{8}}$
0 1 0 0 0 0	0	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{5}}$	0	0	0	0	0
0 1 -1 0 1 1	$\sqrt{\frac{1}{6}}$	0	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{120}}$	$-\sqrt{\frac{1}{5}}$	0	$\sqrt{\frac{1}{8}}$
0 0 0 0 1 0	0	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{5}}$	0	0	0	0	0
0 0 0 0 0 0	0	0	0	0	0	0	$\sqrt{\frac{27}{40}}$	$-\sqrt{\frac{1}{5}}$	0	$-\sqrt{\frac{1}{8}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{40}}$	$-\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{8}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{3}{40}}$	$\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{8}}$

	27 0 2 -1	27 0 1 -1	10 0 1 -1	$\overline{10}$ 0 1 -1	8 0 1 -1	8' 0 1 -1
1 $\frac{1}{2}$ $-\frac{1}{2}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{6}}$
0 1 0 0 1 -1	$\sqrt{\frac{1}{2}}$	0	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0	$\sqrt{\frac{1}{3}}$
0 1 -1 0 1 0	$\sqrt{\frac{1}{2}}$	0	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0	$-\sqrt{\frac{1}{3}}$
0 1 -1 0 0 0	0	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{5}}$	0
0 0 0 0 1 -1	0	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{5}}$	0
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{6}}$

	27 0 2 -2
0 1 -1 0 1 -1	1

TABLE II (*Continued*)

$8 \otimes 8$	27 -1 $\frac{3}{2}$ $\frac{3}{2}$	$\overline{10}$ -1 $\frac{3}{2}$ $\frac{3}{2}$
0 1 1 -1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 1	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$

$8 \otimes 8$	27 -1 $\frac{3}{2}$ $\frac{1}{2}$	$\overline{10}$ -1 $\frac{3}{2}$ $\frac{1}{2}$	27 -1 $\frac{1}{2}$ $\frac{1}{2}$	10 -1 $\frac{1}{2}$ $\frac{1}{2}$	8 -1 $\frac{1}{2}$ $\frac{1}{2}$	8′ -1 $\frac{1}{2}$ $\frac{1}{2}$
0 1 1 -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{6}}$
0 1 0 -1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{60}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$-\sqrt{\frac{1}{12}}$
0 0 0 -1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	$\sqrt{\frac{9}{20}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{4}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 0	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{60}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{3}{20}}$	$\sqrt{\frac{1}{12}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 0 0 0	0	0	$\sqrt{\frac{9}{20}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{4}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 1	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{6}}$

$8 \otimes 8$	27 -1 $\frac{3}{2}$ $-\frac{1}{2}$	$\overline{10}$ -1 $\frac{3}{2}$ $-\frac{1}{2}$	27 -1 $\frac{1}{2}$ $-\frac{1}{2}$	10 -1 $\frac{1}{2}$ $-\frac{1}{2}$	8 -1 $\frac{1}{2}$ $-\frac{1}{2}$	8′ -1 $\frac{1}{2}$ $-\frac{1}{2}$
0 1 0 -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{60}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{3}{20}}$	$\sqrt{\frac{1}{12}}$
0 1 -1 -1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{6}}$
0 0 0 -1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{9}{20}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{4}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 -1	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{6}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 0	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{60}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{3}{20}}$	$-\sqrt{\frac{1}{12}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 0 0	0	0	$\sqrt{\frac{9}{20}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{4}}$

$8 \otimes 8$	27 -1 $\frac{3}{2}$ $-\frac{3}{2}$	$\overline{10}$ -1 $\frac{3}{2}$ $-\frac{3}{2}$
0 1 -1 -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 -1	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$

$8 \otimes 8$	27 -2 1 1
-1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	1

$8 \otimes 8$	27 -2 1 0	10 -2 0 0
-1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$

$8 \otimes 8$	27 -2 1 -1
-1 $\frac{1}{2}$ $-\frac{1}{2}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	1

TABLE III. Clebsch–Gordan coefficients for $8\otimes10$.

Form: $8\otimes10$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	N Y I I_3

8 ⊗ 10

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 1 $\frac{5}{2}$ $\frac{5}{2}$
0 1 1 1 $\frac{3}{2}$ $\frac{3}{2}$	1

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 1 $\frac{5}{2}$ $\frac{3}{2}$	35 1 $\frac{3}{2}$ $\frac{3}{2}$	27 1 $\frac{3}{2}$ $\frac{3}{2}$	10 1 $\frac{3}{2}$ $\frac{3}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 1	0	$\sqrt{\frac{5}{8}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{4}}$
0 1 1 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$-\sqrt{\frac{1}{40}}$	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{4}}$
0 1 0 1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{3}{80}}$	$\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{3}{8}}$
0 0 0 1 $\frac{3}{2}$ $\frac{3}{2}$	0	$\sqrt{\frac{5}{16}}$	$-\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{1}{8}}$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 1 $\frac{5}{2}$ $\frac{1}{2}$	35 1 $\frac{3}{2}$ $\frac{1}{2}$	27 1 $\frac{3}{2}$ $\frac{1}{2}$	10 1 $\frac{3}{2}$ $\frac{1}{2}$	27 1 $\frac{1}{2}$ $\frac{1}{2}$	8 1 $\frac{1}{2}$ $\frac{1}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 0	0	$\sqrt{\frac{5}{12}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{4}{15}}$	$-\sqrt{\frac{1}{15}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 1	0	$\sqrt{\frac{5}{24}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{8}{15}}$	$\sqrt{\frac{2}{15}}$
0 1 1 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{2}{15}}$
0 1 0 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$\sqrt{\frac{1}{240}}$	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{15}}$	$\sqrt{\frac{4}{15}}$
0 1 -1 1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{40}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{2}{5}}$
0 0 0 1 $\frac{3}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{5}{16}}$	$-\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{1}{8}}$	0	0

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 1 $\frac{5}{2}$ $-\frac{1}{2}$	35 1 $\frac{3}{2}$ $-\frac{1}{2}$	27 1 $\frac{3}{2}$ $-\frac{1}{2}$	10 1 $\frac{3}{2}$ $-\frac{1}{2}$	27 1 $\frac{1}{2}$ $-\frac{1}{2}$	8 1 $\frac{1}{2}$ $-\frac{1}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 -1	0	$\sqrt{\frac{5}{24}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{8}{15}}$	$-\sqrt{\frac{2}{15}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 0	0	$\sqrt{\frac{5}{12}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{4}{15}}$	$\sqrt{\frac{1}{15}}$
0 1 1 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{1}{40}}$	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{2}{5}}$
0 1 0 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$-\sqrt{\frac{1}{240}}$	$-\sqrt{\frac{1}{48}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{15}}$	$\sqrt{\frac{4}{15}}$
0 1 -1 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{2}{15}}$
0 0 0 1 $\frac{3}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{5}{16}}$	$-\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{1}{8}}$	0	0

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 1 $\frac{5}{2}$ $-\frac{3}{2}$	35 1 $\frac{3}{2}$ $-\frac{3}{2}$	27 1 $\frac{3}{2}$ $-\frac{3}{2}$	10 1 $\frac{3}{2}$ $-\frac{3}{2}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 -1	0	$\sqrt{\frac{5}{8}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{4}}$
0 1 0 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{2}{5}}$	$-\sqrt{\frac{3}{80}}$	$-\sqrt{\frac{3}{16}}$	$\sqrt{\frac{3}{8}}$
0 1 -1 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$\sqrt{\frac{1}{40}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{4}}$
0 0 0 1 $\frac{3}{2}$ $-\frac{3}{2}$	0	$\sqrt{\frac{5}{16}}$	$-\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{1}{8}}$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 1 $\frac{5}{2}$ $-\frac{5}{2}$
0 1 -1 1 $\frac{3}{2}$ $-\frac{3}{2}$	1

8 ⊗ 10

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 2 2 2
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{3}{2}$	1

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 2 2 1	27 2 1 1
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$-\sqrt{\frac{1}{4}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{3}{4}}$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 2 2 0	27 2 1 0
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 2 2 -1	27 2 1 -1
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{3}{4}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$\sqrt{\frac{1}{4}}$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	35 2 2 -2
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{3}{2}$	1

TABLE III (*Continued*)

8 ⊗ 10

		35 0 2 2	27 0 2 2
0 1 1	0 1 1	$\sqrt{\frac{3}{4}}$	$\sqrt{\frac{1}{4}}$
$-1\ \frac{1}{2}\ \frac{1}{2}$	$1\ \frac{3}{2}\ \frac{3}{2}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{3}{4}}$

		35 0 2 1	27 0 2 1	35 0 1 1	27 0 1 1	10 0 1 1	8 0 1 1
$1\ \frac{1}{2}\ \frac{1}{2}$	$-1\ \frac{1}{2}\ \frac{1}{2}$	0	0	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{15}}$
0 1 1	0 1 0	$\sqrt{\frac{3}{8}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{9}{40}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{15}}$
0 1 0	0 1 1	$\sqrt{\frac{3}{8}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{9}{40}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{15}}$
0 0 0	0 1 1	0	0	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{3}{10}}$	0	$-\sqrt{\frac{1}{5}}$
$-1\ \frac{1}{2}\ \frac{1}{2}$	$1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{1}{48}}$	$\sqrt{\frac{1}{80}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{2}{15}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}$	$1\ \frac{3}{2}\ \frac{3}{2}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{3}{16}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{3}{80}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{2}{5}}$

		35 0 2 0	27 0 2 0	35 0 1 0	27 0 1 0	10 0 1 0	8 0 1 0	27 0 0 0	8 0 0 0
$1\ \frac{1}{2}\ \frac{1}{2}$	$-1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{15}}$	$-\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{5}}$
$1\ \frac{1}{2}\ -\frac{1}{2}$	$-1\ \frac{1}{2}\ \frac{1}{2}$	0	0	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{15}}$	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{5}}$
0 1 1	0 1 -1	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{9}{40}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{15}}$	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{1}{5}}$
0 1 0	0 1 0	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{6}}$	0	0	0	0	$-\sqrt{\frac{2}{15}}$	$\sqrt{\frac{1}{5}}$
0 1 -1	0 1 1	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{9}{40}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{15}}$	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{1}{5}}$
0 0 0	0 1 0	0	0	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{3}{10}}$	0	$-\sqrt{\frac{1}{5}}$	0	0
$-1\ \frac{1}{2}\ \frac{1}{2}$	$1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{40}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{4}{15}}$	0	0
$-1\ \frac{1}{2}\ -\frac{1}{2}$	$1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{3}{8}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{40}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{4}{15}}$	0	0

		35 0 2 -1	27 0 2 -1	35 0 1 -1	27 0 1 -1	10 0 1 -1	8 0 1 -1
$1\ \frac{1}{2}\ -\frac{1}{2}$	$-1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{15}}$
0 1 0	0 1 -1	$\sqrt{\frac{3}{8}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{9}{40}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{15}}$
0 1 -1	0 1 0	$\sqrt{\frac{3}{8}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{9}{40}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{15}}$
0 0 0	0 1 -1	0	0	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{3}{10}}$	0	$-\sqrt{\frac{1}{5}}$
$-1\ \frac{1}{2}\ \frac{1}{2}$	$1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{1}{16}}$	$\sqrt{\frac{3}{80}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{2}{5}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}$	$1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{9}{16}}$	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{1}{80}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{2}{15}}$

		35 0 2 -2	27 0 2 -2
0 1 -1	0 1 -1	$\sqrt{\frac{3}{4}}$	$\sqrt{\frac{1}{4}}$
$-1\ \frac{3}{2}\ -\frac{1}{2}$	$1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{3}{4}}$

TABLE III (*Continued*)

$\underset{\sim}{8} \otimes \underset{\sim}{10}$

	$\underset{\sim}{35}$ -1 $\frac{3}{2}$ $\frac{3}{2}$	$\underset{\sim}{27}$ -1 $\frac{3}{2}$ $\frac{3}{2}$
$0\ 1\ 1 \quad -1\ \frac{1}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$
$-1\ \frac{1}{2}\ \frac{1}{2} \quad 0\ 1\ 1$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$

	$\underset{\sim}{35}$ -1 $\frac{3}{2}$ $\frac{1}{2}$	$\underset{\sim}{27}$ -1 $\frac{3}{2}$ $\frac{1}{2}$	$\underset{\sim}{35}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	$\underset{\sim}{27}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	$\underset{\sim}{10}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	$\underset{\sim}{8}$ -1 $\frac{1}{2}$ $\frac{1}{2}$
$1\ \frac{1}{2}\ \frac{1}{2} \quad -2\ 0\ 0$	0	0	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{9}{40}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{2}{5}}$
$0\ 1\ 1 \quad -1\ \frac{1}{2}\ -\frac{1}{2}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{49}{120}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{2}{15}}$
$0\ 1\ 0 \quad -1\ \frac{1}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{48}}$	$\sqrt{\frac{49}{240}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{15}}$
$0\ 0\ 0 \quad -1\ \frac{1}{2}\ \frac{1}{2}$	0	0	$\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{9}{80}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{5}}$
$-1\ \frac{1}{2}\ \frac{1}{2} \quad 0\ 1\ 0$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{60}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{15}}$
$-1\ \frac{1}{2}\ -\frac{1}{2} \quad 0\ 1\ 1$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{15}}$

	$\underset{\sim}{35}$ -1 $\frac{3}{2}$ $-\frac{1}{2}$	$\underset{\sim}{27}$ -1 $\frac{3}{2}$ $-\frac{1}{2}$	$\underset{\sim}{35}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\underset{\sim}{27}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\underset{\sim}{10}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$	$\underset{\sim}{8}$ -1 $\frac{1}{2}$ $-\frac{1}{2}$
$1\ \frac{1}{2}\ -\frac{1}{2} \quad -2\ 0\ 0$	0	0	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{9}{40}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{2}{5}}$
$0\ 1\ 0 \quad -1\ \frac{1}{2}\ -\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{49}{240}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{15}}$
$0\ 1\ -1 \quad -1\ \frac{1}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{49}{120}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{2}{15}}$
$0\ 0\ 0 \quad -1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	$\sqrt{\frac{9}{16}}$	$-\sqrt{\frac{9}{80}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{5}}$
$-1\ \frac{1}{2}\ \frac{1}{2} \quad 0\ 1\ -1$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{2}{15}}$
$-1\ \frac{1}{2}\ -\frac{1}{2} \quad 0\ 1\ 0$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{60}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{15}}$

	$\underset{\sim}{35}$ -1 $\frac{3}{2}$ $-\frac{3}{2}$	$\underset{\sim}{27}$ -1 $\frac{3}{2}$ $-\frac{3}{2}$
$0\ 1\ -1 \quad -1\ \frac{1}{2}\ -\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$
$-1\ \frac{1}{2}\ -\frac{1}{2} \quad 0\ 1\ -1$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{2}}$

$\underset{\sim}{8} \otimes \underset{\sim}{10}$

	$\underset{\sim}{35}$ -2 1 1	$\underset{\sim}{27}$ -2 1 1
$0\ 1\ 1 \quad -2\ 0\ 0$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{3}{4}}$
$-1\ \frac{1}{2}\ \frac{1}{2} \quad -1\ \frac{1}{2}\ \frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$-\sqrt{\frac{1}{4}}$

	$\underset{\sim}{35}$ -2 1 0	$\underset{\sim}{27}$ -2 1 0	$\underset{\sim}{35}$ -2 0 0	$\underset{\sim}{10}$ -2 0 0
$0\ 1\ 0 \quad -2\ 0\ 0$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{3}{4}}$	0	0
$0\ 0\ 0 \quad -2\ 0\ 0$	0	0	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{2}}$
$-1\ \frac{1}{2}\ \frac{1}{2} \quad -1\ \frac{1}{2}\ -\frac{1}{2}$	$\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{4}}$
$-1\ \frac{1}{2}\ -\frac{1}{2} \quad -1\ \frac{1}{2}\ \frac{1}{2}$	$\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$

	$\underset{\sim}{35}$ -2 1 -1	$\underset{\sim}{27}$ -2 1 -1
$0\ 1\ -1 \quad -2\ 0\ 0$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{3}{4}}$
$-1\ \frac{1}{2}\ -\frac{1}{2} \quad -1\ \frac{1}{2}\ -\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$-\sqrt{\frac{1}{4}}$

$\underset{\sim}{8} \otimes \underset{\sim}{10}$

	$\underset{\sim}{35}$ -3 $\frac{1}{2}$ $\frac{1}{2}$
$-1\ \frac{1}{2}\ \frac{1}{2} \quad -2\ 0\ 0$	1

	$\underset{\sim}{35}$ -3 $\frac{1}{2}$ $-\frac{1}{2}$
$-1\ \frac{1}{2}\ -\frac{1}{2} \quad -2\ 0\ 0$	1

Table IV. Clebsch–Gordan coefficients for $8 \otimes 27$.

Form:

$8 \otimes 27$	N Y I I_3
$y\ i\ i_3$ $\quad y'\ i'\ i_3'$	

$8 \otimes 27$	64 2 2 2	35 2 2 2
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{2}{3}}$	$-\sqrt{\frac{1}{3}}$
0 1 1 2 1 1	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{3}}$

	64 2 2 1	35 2 2 1	64 2 1 1	$\overline{35}$ 2 1 1	27 2 1 1	27′ 2 1 1
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{126}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{5}{56}}$	$\sqrt{\frac{1}{24}}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	$\sqrt{\frac{40}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{56}}$	$\sqrt{\frac{5}{24}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$
0 1 1 2 1 0	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
0 1 0 2 1 1	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$
0 0 0 2 1 1	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{56}}$	$-\sqrt{\frac{3}{8}}$

	64 2 2 0	35 2 2 0	64 2 1 0	$\overline{35}$ 2 1 0	27 2 1 0	27′ 2 1 0	$\overline{35}$ 2 0 0	$\overline{10}$ 2 0 0
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{63}}$	$-\sqrt{\frac{2}{9}}$	$\sqrt{\frac{5}{28}}$	$\sqrt{\frac{1}{12}}$	0	0
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{72}}$	$-\sqrt{\frac{1}{112}}$	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{12}}$	$-\sqrt{\frac{1}{12}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{63}}$	$\sqrt{\frac{2}{9}}$	$-\sqrt{\frac{5}{28}}$	$-\sqrt{\frac{1}{12}}$	0	0
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{72}}$	$-\sqrt{\frac{1}{112}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{12}}$	$\sqrt{\frac{1}{12}}$
0 1 1 2 1 -1	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{18}}$	$-\sqrt{\frac{5}{18}}$
0 1 0 2 1 0	$\sqrt{\frac{2}{9}}$	$\sqrt{\frac{4}{9}}$	0	0	0	0	$-\sqrt{\frac{1}{18}}$	$\sqrt{\frac{5}{18}}$
0 1 -1 2 1 1	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{1}{9}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{18}}$	$-\sqrt{\frac{5}{18}}$
0 0 0 2 1 0	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{56}}$	$-\sqrt{\frac{3}{8}}$	0	0

	64 2 2 -1	35 2 2 -1	64 2 1 -1	$\overline{35}$ 2 1 -1	27 2 1 -1	27′ 2 1 -1
1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{126}}$	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{5}{56}}$	$-\sqrt{\frac{1}{24}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{40}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{56}}$	$\sqrt{\frac{5}{24}}$
0 1 0 2 1 -1	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
0 1 -1 2 1 0	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$
0 0 0 2 1 -1	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{56}}$	$-\sqrt{\frac{3}{8}}$

	64 2 2 -2	35 2 2 -2
1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{2}{3}}$	$-\sqrt{\frac{1}{3}}$
0 1 -1 2 1 -1	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{3}}$

$8 \otimes 27$	64 3 $\frac{3}{2}$ $\frac{3}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 2 1 1	1

	64 3 $\frac{3}{2}$ $\frac{1}{2}$	$\overline{35}$ 3 $\frac{1}{2}$ $\frac{1}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 2 1 0	$\sqrt{\frac{2}{3}}$	$-\sqrt{\frac{1}{3}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 2 1 1	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{3}}$

	64 3 $\frac{3}{2}$ $-\frac{1}{2}$	$\overline{35}$ 3 $\frac{1}{2}$ $-\frac{1}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 2 1 -1	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{2}{3}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 2 1 0	$\sqrt{\frac{2}{3}}$	$\sqrt{\frac{1}{3}}$

	64 3 $\frac{3}{2}$ $-\frac{3}{2}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 2 1 -1	1

TABLE IV (*Continued*)

$8 \otimes 27$	64 1 5/2 5/2	35 1 5/2 5/2
1 1/2 1/2 0 2 2	$\sqrt{1/3}$	$-\sqrt{2/3}$
0 1 1 1 3/2 3/2	$\sqrt{2/3}$	$\sqrt{1/3}$

	64 1 5/2 3/2	35 1 5/2 3/2	64 1 3/2 3/2	35 1 3/2 3/2	$\overline{35}$ 1 3/2 3/2	27 1 3/2 3/2	27′ 1 3/2 3/2	10 1 3/2 3/2
1 1/2 1/2 0 2 1	$\sqrt{4/15}$	$-\sqrt{8/15}$	$\sqrt{1/315}$	$-\sqrt{1/720}$	$-\sqrt{1/36}$	$\sqrt{15/224}$	$\sqrt{1/32}$	$-\sqrt{5/72}$
1 1/2 1/2 0 1 1	0	0	$\sqrt{25/63}$	$-\sqrt{25/144}$	$\sqrt{5/36}$	$-\sqrt{27/224}$	$\sqrt{5/32}$	$-\sqrt{1/72}$
1 1/2 -1/2 0 2 2	$\sqrt{1/15}$	$-\sqrt{2/15}$	$-\sqrt{4/315}$	$\sqrt{1/180}$	$\sqrt{1/9}$	$-\sqrt{15/56}$	$-\sqrt{1/8}$	$\sqrt{5/18}$
0 1 1 1 3/2 1/2	$\sqrt{2/5}$	$\sqrt{1/5}$	$-\sqrt{2/945}$	$\sqrt{49/1080}$	$-\sqrt{2/27}$	$-\sqrt{5/112}$	$\sqrt{3/16}$	$\sqrt{5/108}$
0 1 1 1 1/2 1/2	0	0	$\sqrt{50/189}$	$\sqrt{25/54}$	$\sqrt{5/54}$	$\sqrt{1/7}$	0	$\sqrt{1/27}$
0 1 0 1 3/2 3/2	$\sqrt{4/15}$	$\sqrt{2/15}$	$\sqrt{1/315}$	$-\sqrt{49/720}$	$\sqrt{1/9}$	$\sqrt{15/224}$	$-\sqrt{9/32}$	$-\sqrt{5/72}$
0 0 0 1 3/2 3/2	0	0	$\sqrt{5/21}$	$-\sqrt{5/48}$	$-\sqrt{1/3}$	$\sqrt{5/224}$	$-\sqrt{3/32}$	$\sqrt{5/24}$
-1 1/2 1/2 2 1 1	0	0	$\sqrt{5/63}$	$\sqrt{5/36}$	$-\sqrt{1/9}$	$-\sqrt{15/56}$	$-\sqrt{1/8}$	$-\sqrt{5/18}$

	64 1 5/2 1/2	35 1 5/2 1/2	64 1 3/2 1/2	35 1 3/2 1/2	$\overline{35}$ 1 3/2 1/2	27 1 3/2 1/2	27′ 1 3/2 1/2	10 1 3/2 1/2	64 1 1/2 1/2	$\overline{35}$ 1 1/2 1/2	27 1 1/2 1/2	27 1 1/2 1/2	$\overline{10}$ 1 1/2 1/2	8 1 1/2 1/2
1 1/2 1/2 0 2 0	$\sqrt{1/5}$	$-\sqrt{2/5}$	$\sqrt{2/315}$	$-\sqrt{1/360}$	$-\sqrt{1/18}$	$\sqrt{15/112}$	$\sqrt{1/16}$	$-\sqrt{5/36}$	0	0	0	0	0	0
1 1/2 1/2 0 1 0	0	0	$\sqrt{50/189}$	$-\sqrt{25/216}$	$\sqrt{5/54}$	$-\sqrt{9/112}$	$\sqrt{5/48}$	$-\sqrt{1/108}$	$\sqrt{5/189}$	$-\sqrt{5/54}$	$\sqrt{9/140}$	$\sqrt{1/12}$	$-\sqrt{1/27}$	$\sqrt{4/135}$
1 1/2 1/2 0 0 0	0	0	0	0	0	0	0	0	$\sqrt{20/63}$	$\sqrt{5/18}$	$-\sqrt{3/140}$	$\sqrt{1/4}$	$\sqrt{1/9}$	$\sqrt{1/45}$
1 1/2 -1/2 0 2 1	$\sqrt{2/15}$	$-\sqrt{4/15}$	$-\sqrt{1/105}$	$\sqrt{1/240}$	$\sqrt{1/12}$	$-\sqrt{45/224}$	$-\sqrt{3/32}$	$\sqrt{5/24}$	0	0	0	0	0	0
1 1/2 -1/2 0 1 1	0	0	$\sqrt{25/189}$	$-\sqrt{25/432}$	$\sqrt{5/108}$	$-\sqrt{9/224}$	$\sqrt{5/96}$	$-\sqrt{1/216}$	$-\sqrt{10/189}$	$\sqrt{5/27}$	$-\sqrt{9/70}$	$-\sqrt{1/6}$	$\sqrt{2/27}$	$-\sqrt{8/135}$
0 1 1 1 3/2 -1/2	$\sqrt{1/5}$	$\sqrt{1/10}$	$-\sqrt{8/2835}$	$\sqrt{49/810}$	$-\sqrt{8/81}$	$-\sqrt{5/84}$	$\sqrt{1/4}$	$\sqrt{5/81}$	$-\sqrt{1/567}$	$\sqrt{1/162}$	$-\sqrt{1/21}$	0	$-\sqrt{5/81}$	$\sqrt{4/81}$
0 1 1 1 1/2 -1/2	0	0	$\sqrt{50/567}$	$\sqrt{25/162}$	$-\sqrt{5/162}$	$\sqrt{1/21}$	0	$\sqrt{1/81}$	$-\sqrt{20/567}$	$-\sqrt{125/648}$	$-\sqrt{361/1680}$	$\sqrt{1/16}$	$\sqrt{49/324}$	$\sqrt{4/405}$
0 1 0 1 3/2 1/2	$\sqrt{2/5}$	$\sqrt{1/5}$	$\sqrt{1/2835}$	$-\sqrt{49/6480}$	$\sqrt{1/81}$	$\sqrt{5/672}$	$-\sqrt{1/32}$	$-\sqrt{5/648}$	$\sqrt{2/567}$	$-\sqrt{1/81}$	$\sqrt{2/21}$	0	$\sqrt{10/81}$	$-\sqrt{8/81}$
0 1 0 1 1/2 1/2	0	0	$\sqrt{100/567}$	$\sqrt{25/81}$	$\sqrt{5/81}$	$\sqrt{2/21}$	0	$\sqrt{2/81}$	$\sqrt{10/567}$	$\sqrt{125/1296}$	$\sqrt{361/3360}$	$-\sqrt{1/32}$	$-\sqrt{49/648}$	$-\sqrt{2/405}$
0 1 -1 1 3/2 3/2	$\sqrt{1/15}$	$\sqrt{1/30}$	$\sqrt{2/945}$	$-\sqrt{49/1080}$	$\sqrt{2/27}$	$\sqrt{5/112}$	$-\sqrt{3/16}$	$-\sqrt{5/108}$	$-\sqrt{1/189}$	$\sqrt{1/54}$	$-\sqrt{1/7}$	0	$-\sqrt{5/27}$	$\sqrt{4/27}$
0 0 0 1 3/2 1/2	0	0	$\sqrt{5/21}$	$-\sqrt{5/48}$	$-\sqrt{1/3}$	$\sqrt{5/224}$	$-\sqrt{3/32}$	$\sqrt{5/24}$	0	0	0	0	0	0
0 0 0 1 1/2 1/2	0	0	0	0	0	0	0	0	$\sqrt{10/21}$	$-\sqrt{5/48}$	$-\sqrt{169/1120}$	$-\sqrt{3/32}$	$-\sqrt{1/24}$	$-\sqrt{2/15}$
-1 1/2 1/2 2 1 0	0	0	$\sqrt{10/189}$	$\sqrt{5/54}$	$-\sqrt{2/27}$	$-\sqrt{5/28}$	$-\sqrt{1/12}$	$-\sqrt{5/27}$	$-\sqrt{4/189}$	$\sqrt{1/216}$	$-\sqrt{1/112}$	$\sqrt{5/48}$	$-\sqrt{5/108}$	$-\sqrt{4/27}$
-1 1/2 -1/2 2 1 1	0	0	$\sqrt{5/189}$	$\sqrt{5/108}$	$-\sqrt{1/27}$	$-\sqrt{5/56}$	$-\sqrt{1/24}$	$-\sqrt{5/54}$	$\sqrt{8/189}$	$-\sqrt{1/108}$	$\sqrt{1/56}$	$-\sqrt{5/24}$	$\sqrt{5/54}$	$\sqrt{8/27}$

TABLE IV (*Continued*)

$8 \otimes 27$	64 1 $\frac{5}{2}$ $-\frac{1}{2}$	35 1 $\frac{5}{2}$ $-\frac{1}{2}$	64 1 $\frac{3}{2}$ $-\frac{1}{2}$	35 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\overline{35}$ 1 $\frac{3}{2}$ $-\frac{1}{2}$	27 1 $\frac{3}{2}$ $-\frac{1}{2}$	27 1 $\frac{3}{2}$ $-\frac{1}{2}$	10 1 $\frac{3}{2}$ $-\frac{1}{2}$	64 1 $\frac{1}{2}$ $-\frac{1}{2}$	$\overline{35}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	27 1 $\frac{1}{2}$ $-\frac{1}{2}$	27′ 1 $\frac{1}{2}$ $-\frac{1}{2}$	$\overline{10}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	8 1 $\frac{1}{2}$ $-\frac{1}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 0 2 -1	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{4}{15}}$	$\sqrt{\frac{1}{105}}$	$-\sqrt{\frac{1}{240}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{45}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{24}}$	0	0	0	0	0	0
1 $\frac{1}{2}$ $\frac{1}{2}$ 0 1 -1	0	0	$\sqrt{\frac{25}{189}}$	$-\sqrt{\frac{25}{432}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{9}{224}}$	$\sqrt{\frac{5}{96}}$	$-\sqrt{\frac{1}{216}}$	$\sqrt{\frac{10}{189}}$	$-\sqrt{\frac{5}{27}}$	$\sqrt{\frac{9}{70}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{2}{27}}$	$\sqrt{\frac{8}{135}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 2 0	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{2}{5}}$	$-\sqrt{\frac{2}{315}}$	$\sqrt{\frac{1}{360}}$	$\sqrt{\frac{1}{18}}$	$-\sqrt{\frac{15}{112}}$	$-\sqrt{\frac{1}{16}}$	$\sqrt{\frac{5}{36}}$	0	0	0	0	0	0
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 0	0	0	$\sqrt{\frac{50}{189}}$	$-\sqrt{\frac{25}{216}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{9}{112}}$	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{1}{108}}$	$-\sqrt{\frac{5}{189}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{9}{140}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{27}}$	$-\sqrt{\frac{4}{135}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 0 0	0	0	0	0	0	0	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{18}}$	$-\sqrt{\frac{3}{140}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{9}}$	$\sqrt{\frac{1}{45}}$
0 1 1 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{15}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{2}{945}}$	$\sqrt{\frac{49}{1080}}$	$-\sqrt{\frac{2}{27}}$	$-\sqrt{\frac{5}{112}}$	$\sqrt{\frac{3}{16}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{1}{189}}$	$\sqrt{\frac{1}{54}}$	$-\sqrt{\frac{1}{7}}$	0	$-\sqrt{\frac{5}{27}}$	$\sqrt{\frac{4}{27}}$
0 1 0 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{1}{2835}}$	$\sqrt{\frac{49}{6480}}$	$-\sqrt{\frac{1}{81}}$	$-\sqrt{\frac{5}{672}}$	$\sqrt{\frac{1}{32}}$	$\sqrt{\frac{5}{648}}$	$\sqrt{\frac{2}{567}}$	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{2}{21}}$	0	$\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{8}{81}}$
0 1 0 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{25}{81}}$	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{2}{21}}$	0	$\sqrt{\frac{2}{81}}$	$-\sqrt{\frac{10}{567}}$	$-\sqrt{\frac{125}{1296}}$	$-\sqrt{\frac{361}{3360}}$	$\sqrt{\frac{1}{32}}$	$\sqrt{\frac{49}{648}}$	$\sqrt{\frac{2}{405}}$
0 1 -1 1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{8}{2835}}$	$-\sqrt{\frac{49}{810}}$	$\sqrt{\frac{8}{81}}$	$\sqrt{\frac{5}{84}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{1}{567}}$	$\sqrt{\frac{1}{162}}$	$-\sqrt{\frac{1}{21}}$	0	$-\sqrt{\frac{5}{81}}$	$\sqrt{\frac{4}{81}}$
0 1 -1 1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	$\sqrt{\frac{50}{567}}$	$\sqrt{\frac{25}{162}}$	$\sqrt{\frac{5}{162}}$	$\sqrt{\frac{1}{21}}$	0	$\sqrt{\frac{1}{81}}$	$\sqrt{\frac{20}{567}}$	$\sqrt{\frac{125}{648}}$	$\sqrt{\frac{361}{1680}}$	$-\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{49}{324}}$	$-\sqrt{\frac{4}{405}}$
0 0 0 1 $\frac{3}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{5}{224}}$	$-\sqrt{\frac{3}{32}}$	$\sqrt{\frac{5}{24}}$	0	0	0	0	0	0
0 0 0 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	0	0	0	0	0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{169}{1120}}$	$-\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{2}{15}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 2 1 -1	0	0	$\sqrt{\frac{5}{189}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{1}{27}}$	$-\sqrt{\frac{5}{56}}$	$-\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{8}{189}}$	$\sqrt{\frac{1}{108}}$	$-\sqrt{\frac{1}{56}}$	$\sqrt{\frac{5}{24}}$	$-\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{8}{27}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 2 1 0	0	0	$\sqrt{\frac{10}{189}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{2}{27}}$	$-\sqrt{\frac{5}{28}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{5}{27}}$	$\sqrt{\frac{4}{189}}$	$-\sqrt{\frac{1}{216}}$	$\sqrt{\frac{1}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{108}}$	$\sqrt{\frac{4}{27}}$

	64 1 $\frac{5}{2}$ $-\frac{3}{2}$	35 1 $\frac{5}{2}$ $-\frac{3}{2}$	64 1 $\frac{3}{2}$ $-\frac{3}{2}$	35 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\overline{35}$ 1 $\frac{3}{2}$ $-\frac{3}{2}$	27 1 $\frac{3}{2}$ $-\frac{3}{2}$	27′ 1 $\frac{3}{2}$ $-\frac{3}{2}$	10 1 $\frac{3}{2}$ $-\frac{3}{2}$
1 $\frac{1}{2}$ $\frac{1}{2}$ 0 2 -2	$\sqrt{\frac{1}{15}}$	$-\sqrt{\frac{2}{15}}$	$\sqrt{\frac{4}{315}}$	$-\sqrt{\frac{1}{180}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{5}{18}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 2 -1	$\sqrt{\frac{4}{15}}$	$-\sqrt{\frac{8}{15}}$	$-\sqrt{\frac{1}{315}}$	$\sqrt{\frac{1}{720}}$	$\sqrt{\frac{1}{36}}$	$-\sqrt{\frac{15}{224}}$	$-\sqrt{\frac{1}{32}}$	$\sqrt{\frac{5}{72}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 1 -1	0	0	$\sqrt{\frac{25}{63}}$	$-\sqrt{\frac{25}{144}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{27}{224}}$	$\sqrt{\frac{5}{32}}$	$-\sqrt{\frac{1}{72}}$
0 1 0 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{4}{15}}$	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{1}{315}}$	$\sqrt{\frac{49}{720}}$	$-\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{15}{224}}$	$\sqrt{\frac{9}{32}}$	$\sqrt{\frac{5}{72}}$
0 1 -1 1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{2}{945}}$	$-\sqrt{\frac{49}{1080}}$	$\sqrt{\frac{2}{27}}$	$\sqrt{\frac{5}{112}}$	$-\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{5}{108}}$
0 1 -1 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{50}{189}}$	$\sqrt{\frac{25}{54}}$	$\sqrt{\frac{5}{54}}$	$\sqrt{\frac{1}{7}}$	0	$\sqrt{\frac{1}{27}}$
0 0 0 1 $\frac{3}{2}$ $-\frac{3}{2}$	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{5}{224}}$	$-\sqrt{\frac{3}{32}}$	$\sqrt{\frac{5}{24}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 2 1 -1	0	0	$\sqrt{\frac{5}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{5}{18}}$

	64 1 $\frac{5}{2}$ $-\frac{5}{2}$	$\overline{35}$ 1 $\frac{5}{2}$ $-\frac{5}{2}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ 0 2 -2	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{2}{3}}$
0 1 -1 1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{2}{3}}$	$\sqrt{\frac{1}{3}}$

TABLE IV (*Continued*)

$8 \otimes 27$

	64 0 3 3
0 1 1 0 2 2	1

	64 0 3 2	64 0 2 2	35 0 2 2	$\overline{35}$ 0 2 2	27 0 2 2	$27'$ 0 2 2
1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{3}{2}$ $\frac{3}{2}$	0	$\sqrt{\frac{4}{21}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
0 1 1 0 2 1	$\sqrt{\frac{2}{3}}$	0	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{24}}$	0	$\sqrt{\frac{1}{4}}$
0 1 1 0 1 1	0	$\sqrt{\frac{10}{21}}$	$\sqrt{\frac{5}{24}}$	$\sqrt{\frac{5}{24}}$	$\sqrt{\frac{3}{28}}$	0
0 1 0 0 2 2	$\sqrt{\frac{1}{3}}$	0	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0	$-\sqrt{\frac{1}{2}}$
0 0 0 0 2 2	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{5}{14}}$	0
-1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{3}{2}$	0	$\sqrt{\frac{4}{21}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$

	64 0 3 1	64 0 2 1	35 0 2 1	$\overline{35}$ 0 2 1	27 0 2 1	$27'$ 0 2 1	64 0 1 1	35 0 1 1	$\overline{35}$ 0 1 1	27 0 1 1	$27'$ 0 1 1	10 0 1 1	$\overline{10}$ 0 1 1	8 0 1 1
1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{3}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{45}{224}}$	$\sqrt{\frac{3}{32}}$	$\sqrt{\frac{5}{567}}$	$-\sqrt{\frac{1}{324}}$	$-\sqrt{\frac{25}{1296}}$	$\sqrt{\frac{9}{224}}$	$\sqrt{\frac{5}{96}}$	$-\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{5}{324}}$	$\sqrt{\frac{4}{81}}$
1 $\frac{1}{2}$ $\frac{1}{2}$ -1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$-\sqrt{\frac{5}{81}}$	$\sqrt{\frac{20}{81}}$	$-\sqrt{\frac{9}{70}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{16}{81}}$	$\sqrt{\frac{4}{405}}$
1 $\frac{1}{2}$ $-\frac{1}{2}$ -1 $\frac{3}{2}$ $\frac{3}{2}$	0	$\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{15}{224}}$	$\sqrt{\frac{1}{32}}$	$-\sqrt{\frac{5}{189}}$	$\sqrt{\frac{1}{108}}$	$\sqrt{\frac{25}{432}}$	$-\sqrt{\frac{27}{224}}$	$-\sqrt{\frac{5}{32}}$	$\sqrt{\frac{5}{27}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{4}{27}}$
0 1 1 0 2 0	$\sqrt{\frac{2}{5}}$	0	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{1}{16}}$	0	$\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{2835}}$	$\sqrt{\frac{1}{1296}}$	$\sqrt{\frac{1}{1296}}$	$-\sqrt{\frac{1}{56}}$	0	$\sqrt{\frac{5}{324}}$	$-\sqrt{\frac{5}{324}}$	$\sqrt{\frac{4}{81}}$
0 1 1 0 1 0	0	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{3}{56}}$	0	0	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{48}}$	0	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0
0 1 1 0 0 0	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{20}{81}}$	$\sqrt{\frac{20}{81}}$	$\sqrt{\frac{8}{35}}$	0	$\sqrt{\frac{4}{81}}$	$-\sqrt{\frac{4}{81}}$	$-\sqrt{\frac{1}{405}}$
0 1 0 0 2 1	$\sqrt{\frac{8}{15}}$	0	$-\sqrt{\frac{1}{48}}$	$\sqrt{\frac{1}{48}}$	0	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{945}}$	$-\sqrt{\frac{1}{432}}$	$-\sqrt{\frac{1}{432}}$	$\sqrt{\frac{3}{56}}$	0	$-\sqrt{\frac{5}{108}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{4}{27}}$
0 1 0 0 1 1	0	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{3}{56}}$	0	0	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	0	$-\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0
0 1 -1 0 2 2	$\sqrt{\frac{1}{15}}$	0	$-\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{24}}$	0	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{2}{945}}$	$\sqrt{\frac{1}{216}}$	$\sqrt{\frac{1}{216}}$	$-\sqrt{\frac{3}{28}}$	0	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{5}{54}}$	$\sqrt{\frac{8}{27}}$
0 0 0 0 2 1	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{5}{14}}$	0	0	0	0	0	0	0	0	0
0 0 0 0 1 1	0	0	0	0	0	0	$\sqrt{\frac{25}{63}}$	$-\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{70}}$	0	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{4}{45}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{1}{7}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{45}{224}}$	$-\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{567}}$	$\sqrt{\frac{25}{1296}}$	$\sqrt{\frac{1}{324}}$	$-\sqrt{\frac{9}{224}}$	$\sqrt{\frac{5}{96}}$	$-\sqrt{\frac{5}{324}}$	$-\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{4}{81}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{20}{81}}$	$-\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{9}{70}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{16}{81}}$	$\sqrt{\frac{1}{81}}$	$\sqrt{\frac{4}{405}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 1 $\frac{3}{2}$ $\frac{3}{2}$	0	$\sqrt{\frac{1}{21}}$	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{224}}$	$-\sqrt{\frac{1}{32}}$	$\sqrt{\frac{5}{189}}$	$-\sqrt{\frac{25}{432}}$	$-\sqrt{\frac{1}{108}}$	$\sqrt{\frac{27}{224}}$	$-\sqrt{\frac{5}{32}}$	$\sqrt{\frac{5}{108}}$	$\sqrt{\frac{5}{27}}$	$\sqrt{\frac{4}{27}}$

TABLE IV (*Continued*)

$8 \otimes 27$	64 0 3 0	64 0 2 0	35 0 2 0	$\overline{35}$ 0 2 0	27 0 2 0	27′ 0 2 0	64 0 1 0	35 0 1 0	$\overline{35}$ 0 1 0	27 0 1 0	27′ 0 1 0	10 0 1 0	$\overline{10}$ 0 1 0	8 0 1 0	64 0 0 0	27 0 0 0	27′ 0 0 0	8 0 0 0
$1\ \frac{1}{2}\ \frac{1}{2}\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	0	$\sqrt{\frac{2}{21}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{15}{112}}$	$\sqrt{\frac{1}{16}}$	$\sqrt{\frac{10}{567}}$	$-\sqrt{\frac{1}{162}}$	$-\sqrt{\frac{25}{648}}$	$\sqrt{\frac{9}{112}}$	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{5}{162}}$	$\sqrt{\frac{8}{81}}$	0	0	0	0
$1\ \frac{1}{2}\ \frac{1}{2}\quad -1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{50}{567}}$	$-\sqrt{\frac{5}{162}}$	$\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{9}{140}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{162}}$	$\sqrt{\frac{8}{81}}$	$\sqrt{\frac{2}{405}}$	$\sqrt{\frac{2}{21}}$	$\sqrt{\frac{3}{140}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{2}{15}}$
$1\ \frac{1}{2}\ -\frac{1}{2}\quad -1\ \frac{3}{2}\ \frac{1}{2}$	0	$\sqrt{\frac{2}{21}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{15}{112}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{10}{567}}$	$\sqrt{\frac{1}{162}}$	$\sqrt{\frac{25}{648}}$	$-\sqrt{\frac{9}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{10}{81}}$	$\sqrt{\frac{5}{162}}$	$-\sqrt{\frac{8}{81}}$	0	0	0	0
$1\ \frac{1}{2}\ -\frac{1}{2}\quad -1\ \frac{1}{2}\ \frac{1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{50}{567}}$	$-\sqrt{\frac{5}{162}}$	$\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{9}{140}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{162}}$	$\sqrt{\frac{8}{81}}$	$\sqrt{\frac{2}{405}}$	$-\sqrt{\frac{2}{21}}$	$-\sqrt{\frac{3}{140}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{2}{15}}$
$0\ 1\ 1\quad 0\ 2\ -1$	$\sqrt{\frac{1}{5}}$	0	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{1}{16}}$	0	$\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{945}}$	$\sqrt{\frac{1}{432}}$	$\sqrt{\frac{1}{432}}$	$-\sqrt{\frac{3}{56}}$	0	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{5}{108}}$	$\sqrt{\frac{4}{27}}$	0	0	0	0
$0\ 1\ 1\quad 0\ 1\ -1$	0	$\sqrt{\frac{5}{63}}$	$\sqrt{\frac{5}{144}}$	$\sqrt{\frac{5}{144}}$	$\sqrt{\frac{1}{56}}$	0	0	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{48}}$	0	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0	$-\sqrt{\frac{1}{63}}$	$-\sqrt{\frac{8}{35}}$	0	$\sqrt{\frac{4}{45}}$
$0\ 1\ 0\quad 0\ 2\ 0$	$\sqrt{\frac{3}{5}}$	0	0	0	0	0	$\sqrt{\frac{4}{2835}}$	$-\sqrt{\frac{1}{324}}$	$-\sqrt{\frac{1}{324}}$	$\sqrt{\frac{1}{14}}$	0	$-\sqrt{\frac{5}{81}}$	$\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{16}{81}}$	0	0	0	0
$0\ 1\ 0\quad 0\ 1\ 0$	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{36}}$	$\sqrt{\frac{5}{36}}$	$\sqrt{\frac{1}{14}}$	0	0	0	0	0	0	0	0	0	$\sqrt{\frac{1}{63}}$	$\sqrt{\frac{8}{35}}$	0	$-\sqrt{\frac{4}{45}}$
$0\ 1\ 0\quad 0\ 0\ 0$	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{20}{81}}$	$\sqrt{\frac{20}{81}}$	$\sqrt{\frac{8}{35}}$	0	$\sqrt{\frac{4}{81}}$	$-\sqrt{\frac{4}{81}}$	$-\sqrt{\frac{1}{405}}$	0	0	0	0
$0\ 1\ -1\quad 0\ 2\ 1$	$\sqrt{\frac{1}{5}}$	0	$-\sqrt{\frac{1}{16}}$	$\sqrt{\frac{1}{16}}$	0	$-\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{945}}$	$\sqrt{\frac{1}{432}}$	$\sqrt{\frac{1}{432}}$	$-\sqrt{\frac{3}{56}}$	0	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{5}{108}}$	$\sqrt{\frac{4}{27}}$	0	0	0	0
$0\ 1\ -1\quad 0\ 1\ 1$	0	$\sqrt{\frac{5}{63}}$	$\sqrt{\frac{5}{144}}$	$\sqrt{\frac{5}{144}}$	$\sqrt{\frac{1}{56}}$	0	0	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	0	$-\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0	$-\sqrt{\frac{1}{63}}$	$-\sqrt{\frac{8}{35}}$	0	$\sqrt{\frac{4}{45}}$
$0\ 0\ 0\quad 0\ 2\ 0$	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{5}{14}}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$0\ 0\ 0\quad 0\ 1\ 0$	0	0	0	0	0	0	$\sqrt{\frac{25}{63}}$	$-\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{70}}$	0	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{4}{45}}$	0	0	0	0
$0\ 0\ 0\quad 0\ 0\ 0$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{8}{35}}$	0	$-\sqrt{\frac{1}{5}}$
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 1\ \frac{3}{2}\ -\frac{1}{2}$	0	$\sqrt{\frac{2}{21}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{15}{112}}$	$-\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{10}{567}}$	$\sqrt{\frac{25}{648}}$	$\sqrt{\frac{1}{162}}$	$-\sqrt{\frac{9}{112}}$	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{162}}$	$-\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{8}{81}}$	0	0	0	0
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{50}{567}}$	$\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{5}{162}}$	$-\sqrt{\frac{9}{140}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{8}{81}}$	$\sqrt{\frac{1}{162}}$	$\sqrt{\frac{2}{405}}$	$-\sqrt{\frac{2}{21}}$	$-\sqrt{\frac{3}{140}}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{2}{15}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 1\ \frac{3}{2}\ \frac{1}{2}$	0	$\sqrt{\frac{2}{21}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{15}{112}}$	$-\sqrt{\frac{1}{16}}$	$\sqrt{\frac{10}{567}}$	$-\sqrt{\frac{25}{648}}$	$-\sqrt{\frac{1}{162}}$	$\sqrt{\frac{9}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{162}}$	$\sqrt{\frac{10}{81}}$	$\sqrt{\frac{8}{81}}$	0	0	0	0
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 1\ \frac{1}{2}\ \frac{1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{50}{567}}$	$\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{5}{162}}$	$-\sqrt{\frac{9}{140}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{8}{81}}$	$\sqrt{\frac{1}{162}}$	$\sqrt{\frac{2}{405}}$	$\sqrt{\frac{2}{21}}$	$\sqrt{\frac{3}{140}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{2}{15}}$

Table IV (*Continued*)

$8 \otimes 27$	64 0 3 −1	64 0 2 −1	35 0 2 −1	$\overline{35}$ 0 2 −1	27 0 2 −1	27′ 0 2 −1	64 0 1 −1	35 0 1 −1	$\overline{35}$ 0 1 −1	27 0 1 −1	27′ 0 1 −1	10 0 1 −1	$\overline{10}$ 0 1 −1	8 0 1 −1
$1\ \frac{1}{2}\ \frac{1}{2}\quad -1\ \frac{3}{2}\ \frac{-3}{2}$	0	$\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{15}{224}}$	$\sqrt{\frac{1}{32}}$	$\sqrt{\frac{5}{189}}$	$-\sqrt{\frac{1}{108}}$	$-\sqrt{\frac{25}{432}}$	$\sqrt{\frac{27}{224}}$	$\sqrt{\frac{5}{32}}$	$-\sqrt{\frac{5}{27}}$	$-\sqrt{\frac{5}{108}}$	$\sqrt{\frac{4}{27}}$
$1\ \frac{1}{2}\ \frac{-1}{2}\quad -1\ \frac{3}{2}\ \frac{-1}{2}$	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{45}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{567}}$	$\sqrt{\frac{1}{324}}$	$\sqrt{\frac{25}{1296}}$	$-\sqrt{\frac{9}{224}}$	$-\sqrt{\frac{5}{96}}$	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{5}{324}}$	$-\sqrt{\frac{4}{81}}$
$1\ \frac{1}{2}\ \frac{-1}{2}\quad -1\ \frac{1}{2}\ \frac{-1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$-\sqrt{\frac{5}{81}}$	$\sqrt{\frac{20}{81}}$	$-\sqrt{\frac{9}{70}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{16}{81}}$	$\sqrt{\frac{4}{405}}$
0 1 1 0 2 −2	$\sqrt{\frac{1}{15}}$	0	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{1}{24}}$	0	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{2}{945}}$	$\sqrt{\frac{1}{216}}$	$\sqrt{\frac{1}{216}}$	$-\sqrt{\frac{3}{28}}$	0	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{5}{54}}$	$\sqrt{\frac{8}{27}}$
0 1 0 0 2 −1	$\sqrt{\frac{8}{15}}$	0	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{1}{48}}$	0	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{945}}$	$-\sqrt{\frac{1}{432}}$	$-\sqrt{\frac{1}{432}}$	$\sqrt{\frac{3}{56}}$	0	$-\sqrt{\frac{5}{108}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{4}{27}}$
0 1 0 0 1 −1	0	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{3}{56}}$	0	0	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{48}}$	0	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{12}}$	0
0 1 −1 0 2 0	$\sqrt{\frac{2}{5}}$	0	$-\sqrt{\frac{1}{16}}$	$\sqrt{\frac{1}{16}}$	0	$-\sqrt{\frac{3}{8}}$	$-\sqrt{\frac{1}{2835}}$	$\sqrt{\frac{1}{1296}}$	$\sqrt{\frac{1}{1296}}$	$-\sqrt{\frac{1}{56}}$	0	$\sqrt{\frac{5}{324}}$	$-\sqrt{\frac{5}{324}}$	$\sqrt{\frac{4}{81}}$
0 1 −1 0 1 0	0	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	$\sqrt{\frac{3}{56}}$	0	0	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{48}}$	0	$-\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0
0 1 −1 0 0 0	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{20}{81}}$	$\sqrt{\frac{20}{81}}$	$\sqrt{\frac{8}{35}}$	0	$\sqrt{\frac{4}{81}}$	$-\sqrt{\frac{4}{81}}$	$-\sqrt{\frac{1}{405}}$
0 0 0 0 2 −1	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{5}{14}}$	0	0	0	0	0	0	0	0	0
0 0 0 0 1 −1	0	0	0	0	0	0	$\sqrt{\frac{25}{63}}$	$-\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{70}}$	0	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{4}{45}}$
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 1\ \frac{3}{2}\ \frac{-3}{2}$	0	$\sqrt{\frac{1}{21}}$	$\sqrt{\frac{1}{48}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{224}}$	$-\sqrt{\frac{1}{32}}$	$-\sqrt{\frac{5}{189}}$	$\sqrt{\frac{25}{432}}$	$\sqrt{\frac{1}{108}}$	$-\sqrt{\frac{27}{224}}$	$\sqrt{\frac{5}{32}}$	$-\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{5}{27}}$	$-\sqrt{\frac{4}{27}}$
$-1\ \frac{1}{2}\ \frac{-1}{2}\quad 1\ \frac{3}{2}\ \frac{-1}{2}$	0	$\sqrt{\frac{1}{7}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{45}{224}}$	$-\sqrt{\frac{3}{32}}$	$\sqrt{\frac{5}{567}}$	$-\sqrt{\frac{25}{1296}}$	$-\sqrt{\frac{1}{324}}$	$\sqrt{\frac{9}{224}}$	$-\sqrt{\frac{5}{96}}$	$\sqrt{\frac{5}{324}}$	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{4}{81}}$
$-1\ \frac{1}{2}\ \frac{-1}{2}\quad 1\ \frac{1}{2}\ \frac{-1}{2}$	0	0	0	0	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{20}{81}}$	$-\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{9}{70}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{16}{81}}$	$\sqrt{\frac{1}{81}}$	$\sqrt{\frac{4}{405}}$

	64 0 3 −2	64 0 2 −2	35 0 2 −2	$\overline{35}$ 0 2 −2	27 0 2 −2	27′ 0 2 −2
$1\ \frac{1}{2}\ \frac{-1}{2}\quad -1\ \frac{3}{2}\ \frac{-3}{2}$	0	$\sqrt{\frac{4}{21}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
0 1 0 0 2 −2	$\sqrt{\frac{1}{3}}$	0	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{12}}$	0	$\sqrt{\frac{1}{2}}$
0 1 −1 0 2 −1	$\sqrt{\frac{2}{3}}$	0	$-\sqrt{\frac{1}{24}}$	$\sqrt{\frac{1}{24}}$	0	$-\sqrt{\frac{1}{4}}$
0 1 −1 0 1 −1	0	$\sqrt{\frac{10}{21}}$	$\sqrt{\frac{5}{24}}$	$\sqrt{\frac{5}{24}}$	$\sqrt{\frac{3}{28}}$	0
0 0 0 0 2 −2	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{5}{14}}$	0
$-1\ \frac{1}{2}\ \frac{-1}{2}\quad 1\ \frac{3}{2}\ \frac{-3}{2}$	0	$\sqrt{\frac{4}{21}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$

	64 0 3 −3
0 1 −1 0 2 −2	1

$8 \otimes 27$

	64 −1 5/2 5/2	$\overline{35}$ −1 5/2 5/2
0 1 1 −1 3/2 3/2	$\sqrt{\frac{2}{3}}$	$\sqrt{\frac{1}{3}}$
−1 1/2 1/2 0 2 2	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{2}{3}}$

	64 −1 5/2 3/2	$\overline{35}$ −1 5/2 3/2	64 −1 3/2 3/2	35 −1 3/2 3/2	$\overline{35}$ −1 3/2 3/2	27 −1 3/2 3/2	27′ −1 3/2 3/2	$\overline{10}$ −1 3/2 3/2
1 1/2 1/2 −2 1 1	0	0	$\sqrt{\frac{5}{63}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{5}{18}}$
0 1 1 −1 3/2 1/2	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{2}{945}}$	$\sqrt{\frac{2}{27}}$	$-\sqrt{\frac{49}{1080}}$	$\sqrt{\frac{5}{112}}$	$\sqrt{\frac{3}{16}}$	$\sqrt{\frac{5}{108}}$
0 1 1 −1 1/2 1/2	0	0	$\sqrt{\frac{50}{189}}$	$\sqrt{\frac{5}{54}}$	$\sqrt{\frac{25}{54}}$	$\sqrt{\frac{1}{7}}$	0	$-\sqrt{\frac{1}{27}}$
0 1 0 −1 3/2 3/2	$\sqrt{\frac{4}{15}}$	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{1}{315}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{49}{720}}$	$-\sqrt{\frac{15}{224}}$	$-\sqrt{\frac{9}{32}}$	$-\sqrt{\frac{5}{72}}$
0 0 0 −1 3/2 3/2	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{24}}$
−1 1/2 1/2 0 2 1	$\sqrt{\frac{4}{15}}$	$-\sqrt{\frac{8}{15}}$	$-\sqrt{\frac{1}{315}}$	$\sqrt{\frac{1}{36}}$	$\sqrt{\frac{1}{720}}$	$-\sqrt{\frac{15}{224}}$	$\sqrt{\frac{1}{32}}$	$-\sqrt{\frac{5}{72}}$
−1 1/2 1/2 0 1 1	0	0	$\sqrt{\frac{25}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{25}{144}}$	$-\sqrt{\frac{27}{224}}$	$-\sqrt{\frac{5}{32}}$	$\sqrt{\frac{1}{72}}$
−1 1/2 −1/2 0 2 2	$\sqrt{\frac{1}{15}}$	$-\sqrt{\frac{2}{15}}$	$\sqrt{\frac{4}{315}}$	$-\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{1}{180}}$	$\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{5}{18}}$

	64 −1 5/2 1/2	$\overline{35}$ −1 5/2 1/2	64 −1 3/2 1/2	35 −1 3/2 1/2	$\overline{35}$ −1 3/2 1/2	27 −1 3/2 1/2	27′ −1 3/2 1/2	$\overline{10}$ −1 3/2 1/2	64 −1 1/2 1/2	35 −1 1/2 1/2	27 −1 1/2 1/2	27′ −1 1/2 1/2	10 −1 1/2 1/2	8 −1 1/2 1/2
1 1/2 1/2 −2 1 0	0	0	$\sqrt{\frac{10}{189}}$	$-\sqrt{\frac{2}{27}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{5}{28}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{5}{27}}$	$\sqrt{\frac{4}{189}}$	$-\sqrt{\frac{1}{216}}$	$\sqrt{\frac{1}{112}}$	$\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{108}}$	$\sqrt{\frac{4}{27}}$
1 1/2 −1/2 −2 1 1	0	0	$\sqrt{\frac{5}{189}}$	$-\sqrt{\frac{1}{27}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{5}{56}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{8}{189}}$	$\sqrt{\frac{1}{108}}$	$-\sqrt{\frac{1}{56}}$	$-\sqrt{\frac{5}{24}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{8}{27}}$
0 1 1 −1 3/2 −1/2	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{8}{2835}}$	$\sqrt{\frac{8}{81}}$	$-\sqrt{\frac{49}{810}}$	$\sqrt{\frac{5}{84}}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{1}{567}}$	$\sqrt{\frac{1}{162}}$	$-\sqrt{\frac{1}{21}}$	0	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{4}{81}}$
0 1 1 −1 1/2 −1/2	0	0	$\sqrt{\frac{50}{567}}$	$\sqrt{\frac{5}{162}}$	$\sqrt{\frac{25}{162}}$	$\sqrt{\frac{1}{21}}$	0	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{20}{567}}$	$\sqrt{\frac{125}{648}}$	$\sqrt{\frac{361}{1680}}$	$\sqrt{\frac{1}{16}}$	$\sqrt{\frac{49}{324}}$	$-\sqrt{\frac{4}{405}}$
0 1 0 −1 3/2 1/2	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{1}{2835}}$	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{49}{6480}}$	$-\sqrt{\frac{5}{672}}$	$-\sqrt{\frac{1}{32}}$	$-\sqrt{\frac{5}{648}}$	$\sqrt{\frac{2}{567}}$	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{2}{21}}$	0	$-\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{8}{81}}$
0 1 0 −1 1/2 1/2	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{25}{81}}$	$\sqrt{\frac{2}{21}}$	0	$-\sqrt{\frac{2}{81}}$	$-\sqrt{\frac{10}{567}}$	$-\sqrt{\frac{125}{1296}}$	$-\sqrt{\frac{361}{3360}}$	$-\sqrt{\frac{1}{32}}$	$-\sqrt{\frac{49}{648}}$	$\sqrt{\frac{2}{405}}$
0 1 −1 −1 3/2 3/2	$\sqrt{\frac{1}{15}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{2}{945}}$	$-\sqrt{\frac{2}{27}}$	$\sqrt{\frac{49}{1080}}$	$-\sqrt{\frac{5}{112}}$	$-\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{1}{189}}$	$\sqrt{\frac{1}{54}}$	$-\sqrt{\frac{1}{7}}$	0	$\sqrt{\frac{5}{27}}$	$\sqrt{\frac{4}{27}}$
0 0 0 −1 3/2 1/2	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{24}}$	0	0	0	0	0	0
0 0 0 −1 1/2 1/2	0	0	0	0	0	0	0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{169}{1120}}$	$\sqrt{\frac{3}{32}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{2}{15}}$
−1 1/2 1/2 0 2 0	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{2}{5}}$	$-\sqrt{\frac{2}{315}}$	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{1}{360}}$	$-\sqrt{\frac{15}{112}}$	$\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{5}{36}}$	0	0	0	0	0	0
−1 1/2 1/2 0 1 0	0	0	$\sqrt{\frac{50}{189}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{25}{216}}$	$-\sqrt{\frac{9}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{1}{108}}$	$-\sqrt{\frac{5}{189}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{9}{140}}$	$\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{27}}$	$-\sqrt{\frac{4}{135}}$
−1 1/2 1/2 0 0 0	0	0	0	0	0	0	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{18}}$	$-\sqrt{\frac{3}{140}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{1}{45}}$
−1 1/2 −1/2 0 2 1	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{4}{15}}$	$\sqrt{\frac{1}{105}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{240}}$	$\sqrt{\frac{45}{224}}$	$-\sqrt{\frac{3}{32}}$	$\sqrt{\frac{5}{24}}$	0	0	0	0	0	0
−1 1/2 −1/2 0 1 1	0	0	$\sqrt{\frac{25}{189}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{25}{432}}$	$-\sqrt{\frac{9}{224}}$	$-\sqrt{\frac{5}{96}}$	$\sqrt{\frac{1}{216}}$	$\sqrt{\frac{10}{189}}$	$-\sqrt{\frac{5}{27}}$	$\sqrt{\frac{9}{70}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{2}{27}}$	$\sqrt{\frac{8}{135}}$

TABLE IV (*Continued*)

Table IV (*Continued*)

$8 \otimes 27$	64	$\overline{35}$	64	35	$\overline{35}$	27	$27'$	$\overline{10}$	64	35	27	$27'$	10	8
	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
	$\frac{5}{2}$	$\frac{5}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$
$1\ \frac{1}{2}\ \frac{1}{2}\quad -2\ 1\ -1$	0	0	$\sqrt{\frac{5}{189}}$	$-\sqrt{\frac{1}{27}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{5}{56}}$	$\sqrt{\frac{1}{24}}$	$\sqrt{\frac{5}{54}}$	$\sqrt{\frac{8}{189}}$	$-\sqrt{\frac{1}{108}}$	$\sqrt{\frac{1}{56}}$	$\sqrt{\frac{5}{24}}$	$-\sqrt{\frac{5}{54}}$	$\sqrt{\frac{8}{27}}$
$1\ \frac{1}{2}\ -\frac{1}{2}\quad -2\ 1\ 0$	0	0	$\sqrt{\frac{10}{189}}$	$-\sqrt{\frac{2}{27}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{5}{28}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{5}{27}}$	$-\sqrt{\frac{4}{189}}$	$\sqrt{\frac{1}{216}}$	$-\sqrt{\frac{1}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{4}{27}}$
$0\ 1\ 1\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{1}{15}}$	$\sqrt{\frac{1}{30}}$	$\sqrt{\frac{2}{945}}$	$\sqrt{\frac{2}{27}}$	$-\sqrt{\frac{49}{1080}}$	$\sqrt{\frac{5}{112}}$	$\sqrt{\frac{3}{16}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{1}{189}}$	$\sqrt{\frac{1}{54}}$	$-\sqrt{\frac{1}{7}}$	0	$\sqrt{\frac{5}{27}}$	$\sqrt{\frac{4}{27}}$
$0\ 1\ 0\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{2835}}$	$\sqrt{\frac{1}{81}}$	$-\sqrt{\frac{49}{6480}}$	$\sqrt{\frac{5}{672}}$	$\sqrt{\frac{1}{32}}$	$\sqrt{\frac{5}{648}}$	$\sqrt{\frac{2}{567}}$	$-\sqrt{\frac{1}{81}}$	$\sqrt{\frac{2}{21}}$	0	$-\sqrt{\frac{10}{81}}$	$-\sqrt{\frac{8}{81}}$
$0\ 1\ 0\quad -1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	$\sqrt{\frac{100}{567}}$	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{25}{81}}$	$\sqrt{\frac{2}{21}}$	0	$-\sqrt{\frac{2}{81}}$	$\sqrt{\frac{10}{567}}$	$\sqrt{\frac{125}{1296}}$	$\sqrt{\frac{361}{3360}}$	$\sqrt{\frac{1}{32}}$	$\sqrt{\frac{49}{648}}$	$-\sqrt{\frac{2}{405}}$
$0\ 1\ -1\quad -1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{8}{2835}}$	$-\sqrt{\frac{8}{81}}$	$\sqrt{\frac{49}{810}}$	$-\sqrt{\frac{5}{84}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{81}}$	$-\sqrt{\frac{1}{567}}$	$\sqrt{\frac{1}{162}}$	$-\sqrt{\frac{1}{21}}$	0	$\sqrt{\frac{5}{81}}$	$\sqrt{\frac{4}{81}}$
$0\ 1\ -1\quad -1\ \frac{1}{2}\ \frac{1}{2}$	0	0	$\sqrt{\frac{50}{567}}$	$\sqrt{\frac{5}{162}}$	$\sqrt{\frac{25}{162}}$	$\sqrt{\frac{1}{21}}$	0	$-\sqrt{\frac{1}{81}}$	$-\sqrt{\frac{20}{567}}$	$-\sqrt{\frac{125}{648}}$	$-\sqrt{\frac{361}{1080}}$	$-\sqrt{\frac{1}{16}}$	$-\sqrt{\frac{49}{324}}$	$\sqrt{\frac{4}{405}}$
$0\ 0\ 0\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{24}}$	0	0	0	0	0	0
$0\ 0\ 0\quad -1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	0	0	0	0	0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{169}{1120}}$	$\sqrt{\frac{3}{32}}$	$\sqrt{\frac{1}{24}}$	$-\sqrt{\frac{2}{15}}$
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 0\ 2\ -1$	$\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{4}{15}}$	$-\sqrt{\frac{1}{105}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{240}}$	$-\sqrt{\frac{45}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{24}}$	0	0	0	0	0	0
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 0\ 1\ -1$	0	0	$\sqrt{\frac{25}{189}}$	$\sqrt{\frac{5}{108}}$	$-\sqrt{\frac{25}{432}}$	$-\sqrt{\frac{9}{224}}$	$-\sqrt{\frac{5}{96}}$	$\sqrt{\frac{1}{216}}$	$-\sqrt{\frac{10}{189}}$	$\sqrt{\frac{5}{27}}$	$-\sqrt{\frac{9}{70}}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{2}{27}}$	$-\sqrt{\frac{8}{135}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 0\ 2\ 0$	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{2}{5}}$	$\sqrt{\frac{2}{315}}$	$-\sqrt{\frac{1}{18}}$	$-\sqrt{\frac{1}{360}}$	$\sqrt{\frac{15}{112}}$	$-\sqrt{\frac{1}{16}}$	$\sqrt{\frac{5}{36}}$	0	0	0	0	0	0
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 0\ 1\ 0$	0	0	$\sqrt{\frac{50}{189}}$	$\sqrt{\frac{5}{54}}$	$-\sqrt{\frac{25}{216}}$	$-\sqrt{\frac{9}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{1}{108}}$	$\sqrt{\frac{5}{189}}$	$-\sqrt{\frac{5}{54}}$	$\sqrt{\frac{9}{140}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{27}}$	$\sqrt{\frac{4}{135}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 0\ 0\ 0$	0	0	0	0	0	0	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{18}}$	$-\sqrt{\frac{3}{140}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{1}{45}}$

	64	$\overline{35}$	64	35	$\overline{35}$	27	$27'$	$\overline{10}$
	-1	-1	-1	-1	-1	-1	-1	-1
	$\frac{5}{2}$	$\frac{5}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$	$\frac{3}{2}$
	$-\frac{3}{2}$	$-\frac{3}{2}$	$-\frac{3}{2}$	$-\frac{3}{2}$	$-\frac{3}{2}$	$-\frac{3}{2}$	$-\frac{3}{2}$	$-\frac{3}{2}$
$1\ \frac{1}{2}\ -\frac{1}{2}\quad -2\ 1\ -1$	0	0	$\sqrt{\frac{5}{63}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{5}{18}}$
$0\ 1\ 0\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{4}{15}}$	$\sqrt{\frac{2}{15}}$	$\sqrt{\frac{1}{315}}$	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{49}{720}}$	$\sqrt{\frac{15}{224}}$	$\sqrt{\frac{9}{32}}$	$\sqrt{\frac{5}{72}}$
$0\ 1\ -1\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{2}{945}}$	$-\sqrt{\frac{2}{27}}$	$\sqrt{\frac{49}{1080}}$	$-\sqrt{\frac{5}{112}}$	$-\sqrt{\frac{3}{16}}$	$-\sqrt{\frac{5}{108}}$
$0\ 1\ -1\quad -1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	$\sqrt{\frac{50}{189}}$	$\sqrt{\frac{5}{54}}$	$\sqrt{\frac{25}{54}}$	$\sqrt{\frac{1}{7}}$	0	$-\sqrt{\frac{1}{27}}$
$0\ 0\ 0\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{224}}$	$\sqrt{\frac{3}{32}}$	$-\sqrt{\frac{5}{24}}$
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 0\ 2\ -2$	$\sqrt{\frac{1}{15}}$	$-\sqrt{\frac{2}{15}}$	$-\sqrt{\frac{4}{315}}$	$\sqrt{\frac{1}{9}}$	$\sqrt{\frac{1}{180}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$	$-\sqrt{\frac{5}{18}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 0\ 2\ -1$	$\sqrt{\frac{4}{15}}$	$-\sqrt{\frac{8}{15}}$	$\sqrt{\frac{1}{315}}$	$-\sqrt{\frac{1}{36}}$	$-\sqrt{\frac{1}{720}}$	$\sqrt{\frac{15}{224}}$	$-\sqrt{\frac{1}{32}}$	$\sqrt{\frac{5}{72}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 0\ 1\ -1$	0	0	$\sqrt{\frac{25}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{25}{144}}$	$-\sqrt{\frac{27}{224}}$	$-\sqrt{\frac{5}{32}}$	$\sqrt{\frac{1}{72}}$

	64	$\overline{35}$
	-1	-1
	$\frac{5}{2}$	$\frac{5}{2}$
	$-\frac{5}{2}$	$-\frac{5}{2}$
$0\ 1\ -1\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{2}{3}}$	$\sqrt{\frac{1}{3}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 0\ 2\ -2$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{2}{3}}$

TABLE IV (*Continued*)

8 ⊗ 27

	64 −2 2 2	$\overline{35}$ −2 2 2
0 1 1 −2 1 1	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{3}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{2}{3}}$	$-\sqrt{\frac{1}{3}}$

	64 −2 2 1	$\overline{35}$ −2 2 1	64 −2 1 1	35 −2 1 1	27 −2 1 1	$27'$ −2 1 1
0 1 1 −2 1 0	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
0 1 0 −2 1 1	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$
0 0 0 −2 1 1	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{56}}$	$\sqrt{\frac{3}{8}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{1}{126}}$	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{5}{56}}$	$\sqrt{\frac{1}{24}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	$\sqrt{\frac{40}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{56}}$	$-\sqrt{\frac{5}{24}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{12}}$	$\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{3}}$	$\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$

	64 −2 2 0	$\overline{35}$ −2 2 0	64 −2 1 0	35 −2 1 0	27 −2 1 0	$27'$ −2 1 0	35 −2 0 0	10 −2 0 0
0 1 1 −2 1 −1	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{1}{9}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{5}{18}}$
0 1 0 −2 1 0	$\sqrt{\frac{2}{9}}$	$\sqrt{\frac{4}{9}}$	0	0	0	0	$-\sqrt{\frac{1}{18}}$	$-\sqrt{\frac{5}{18}}$
0 1 −1 −2 1 1	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{1}{9}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$	$\sqrt{\frac{1}{18}}$	$\sqrt{\frac{5}{18}}$
0 0 0 −2 1 0	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{56}}$	$\sqrt{\frac{3}{8}}$	0	0
−1 $\frac{1}{2}$ $\frac{1}{2}$ −1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{63}}$	$\sqrt{\frac{2}{9}}$	$-\sqrt{\frac{5}{28}}$	$\sqrt{\frac{1}{12}}$	0	0
−1 $\frac{1}{2}$ $\frac{1}{2}$ −1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{72}}$	$-\sqrt{\frac{1}{112}}$	$-\sqrt{\frac{5}{48}}$	$\sqrt{\frac{5}{12}}$	$-\sqrt{\frac{1}{12}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{63}}$	$-\sqrt{\frac{2}{9}}$	$\sqrt{\frac{5}{28}}$	$-\sqrt{\frac{1}{12}}$	0	0
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	$\sqrt{\frac{20}{63}}$	$\sqrt{\frac{5}{72}}$	$-\sqrt{\frac{1}{112}}$	$-\sqrt{\frac{5}{48}}$	$-\sqrt{\frac{5}{12}}$	$\sqrt{\frac{1}{12}}$

	64 −2 2 −1	$\overline{35}$ −2 2 −1	64 −2 1 −1	35 −2 1 −1	27 −2 1 −1	$27'$ −2 1 −1
0 1 0 −2 1 −1	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{12}}$	$\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
0 1 −1 −2 1 0	$\sqrt{\frac{1}{6}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{15}{56}}$	$-\sqrt{\frac{1}{8}}$
0 0 0 −2 1 −1	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{5}{56}}$	$\sqrt{\frac{3}{8}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{6}}$	$-\sqrt{\frac{1}{12}}$	$-\sqrt{\frac{1}{42}}$	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{15}{56}}$	$\sqrt{\frac{1}{8}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{4}}$	$\sqrt{\frac{1}{126}}$	$-\sqrt{\frac{1}{9}}$	$\sqrt{\frac{5}{56}}$	$-\sqrt{\frac{1}{24}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	$\sqrt{\frac{40}{63}}$	$\sqrt{\frac{5}{36}}$	$-\sqrt{\frac{1}{56}}$	$-\sqrt{\frac{5}{24}}$

	64 −2 2 −2	$\overline{35}$ −2 2 −2
0 1 −1 −2 1 −1	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{3}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{2}{3}}$	$-\sqrt{\frac{1}{3}}$

8 ⊗ 27

	64 −3 $\frac{3}{2}$ $\frac{3}{2}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −2 1 1	1

	64 −3 $\frac{3}{2}$ $\frac{1}{2}$	35 −3 $\frac{1}{2}$ $\frac{1}{2}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −2 1 0	$\sqrt{\frac{2}{3}}$	$\sqrt{\frac{1}{3}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −2 1 1	$\sqrt{\frac{1}{3}}$	$-\sqrt{\frac{2}{3}}$

	64 −3 $\frac{3}{2}$ $-\frac{1}{2}$	35 −3 $\frac{1}{2}$ $-\frac{1}{2}$
−1 $\frac{1}{2}$ $\frac{1}{2}$ −2 1 −1	$\sqrt{\frac{1}{3}}$	$\sqrt{\frac{2}{3}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −2 1 0	$\sqrt{\frac{2}{3}}$	$-\sqrt{\frac{1}{3}}$

	64 −3 $\frac{3}{2}$ $-\frac{3}{2}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$ −2 1 −1	1

TABLE V. Clebsch–Gordan coefficients for $\mathbf{10}\otimes\overline{\mathbf{10}}$.

Form: $10\otimes\overline{10}$

$y\ i\ i_3 \quad y'\ i'\ i_3'$	N Y I I_3

$10\otimes\overline{10}$

	64 1 $\frac{5}{2}$ $\frac{5}{2}$
1 $\frac{3}{2}$ $\frac{3}{2}$ 0 1 1	1

	64 1 $\frac{5}{2}$ $\frac{3}{2}$	64 1 $\frac{3}{2}$ $\frac{3}{2}$	27 1 $\frac{3}{2}$ $\frac{3}{2}$
1 $\frac{3}{2}$ $\frac{3}{2}$ 0 1 0	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{6}{35}}$	$\sqrt{\frac{3}{7}}$
1 $\frac{3}{2}$ $\frac{1}{2}$ 0 1 1	$\sqrt{\frac{3}{5}}$	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{2}{7}}$
0 1 1 1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{5}{7}}$	$-\sqrt{\frac{2}{7}}$

	64 1 $\frac{5}{2}$ $\frac{1}{2}$	64 1 $\frac{3}{2}$ $\frac{1}{2}$	27 1 $\frac{3}{2}$ $\frac{1}{2}$	64 1 $\frac{1}{2}$ $\frac{1}{2}$	27 1 $\frac{1}{2}$ $\frac{1}{2}$	8 1 $\frac{1}{2}$ $\frac{1}{2}$
1 $\frac{3}{2}$ $\frac{3}{2}$ 0 1 -1	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{4}{35}}$	$\sqrt{\frac{2}{7}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{8}{35}}$	$\sqrt{\frac{1}{5}}$
1 $\frac{3}{2}$ $\frac{1}{2}$ 0 1 0	$\sqrt{\frac{3}{5}}$	$\sqrt{\frac{2}{105}}$	$\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{16}{105}}$	$-\sqrt{\frac{2}{15}}$
1 $\frac{3}{2}$ $-\frac{1}{2}$ 0 1 1	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{16}{105}}$	$-\sqrt{\frac{8}{21}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{8}{105}}$	$\sqrt{\frac{1}{15}}$
0 1 1 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{2}{21}}$	$\sqrt{\frac{8}{21}}$	$\sqrt{\frac{2}{105}}$	$-\sqrt{\frac{4}{15}}$
0 1 0 1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{4}{21}}$	$-\sqrt{\frac{4}{21}}$	$-\sqrt{\frac{1}{105}}$	$\sqrt{\frac{2}{15}}$
-1 $\frac{1}{2}$ $\frac{1}{2}$ 2 0 0	0	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{18}{35}}$	$\sqrt{\frac{1}{5}}$

	64 1 $\frac{5}{2}$ $-\frac{1}{2}$	64 1 $\frac{3}{2}$ $-\frac{1}{2}$	27 1 $\frac{3}{2}$ $-\frac{1}{2}$	64 1 $\frac{1}{2}$ $-\frac{1}{2}$	27 1 $\frac{1}{2}$ $-\frac{1}{2}$	8 1 $\frac{1}{2}$ $-\frac{1}{2}$
1 $\frac{3}{2}$ $\frac{1}{2}$ 0 1 -1	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{16}{105}}$	$\sqrt{\frac{8}{21}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{8}{105}}$	$\sqrt{\frac{1}{15}}$
1 $\frac{3}{2}$ $-\frac{1}{2}$ 0 1 0	$\sqrt{\frac{3}{5}}$	$-\sqrt{\frac{2}{105}}$	$-\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{16}{105}}$	$-\sqrt{\frac{2}{15}}$
1 $\frac{3}{2}$ $-\frac{3}{2}$ 0 1 1	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{2}{7}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{8}{35}}$	$\sqrt{\frac{1}{5}}$
0 1 0 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{4}{21}}$	$\sqrt{\frac{4}{21}}$	$\sqrt{\frac{1}{105}}$	$-\sqrt{\frac{2}{15}}$
0 1 -1 1 $\frac{1}{2}$ $\frac{1}{2}$	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{2}{21}}$	$-\sqrt{\frac{8}{21}}$	$-\sqrt{\frac{2}{105}}$	$\sqrt{\frac{4}{15}}$
-1 $\frac{1}{2}$ $-\frac{1}{2}$ 2 0 0	0	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{18}{35}}$	$\sqrt{\frac{1}{5}}$

	64 1 $\frac{5}{2}$ $-\frac{3}{2}$	64 1 $\frac{3}{2}$ $-\frac{3}{2}$	27 1 $\frac{3}{2}$ $-\frac{3}{2}$
1 $\frac{3}{2}$ $-\frac{1}{2}$ 0 1 -1	$\sqrt{\frac{3}{5}}$	$\sqrt{\frac{4}{35}}$	$\sqrt{\frac{2}{7}}$
1 $\frac{3}{2}$ $-\frac{3}{2}$ 0 1 0	$\sqrt{\frac{2}{5}}$	$-\sqrt{\frac{6}{35}}$	$-\sqrt{\frac{3}{7}}$
0 1 -1 1 $\frac{1}{2}$ $-\frac{1}{2}$	0	$\sqrt{\frac{5}{7}}$	$-\sqrt{\frac{2}{7}}$

	64 1 $\frac{5}{2}$ $-\frac{5}{2}$
1 $\frac{3}{2}$ $-\frac{3}{2}$ 0 1 -1	1

$10\otimes\overline{10}$

	64 2 2 2
1 $\frac{3}{2}$ $\frac{3}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	1

	64 2 2 1	64 2 1 1	27 2 1 1
1 $\frac{3}{2}$ $\frac{3}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{9}{28}}$	$\sqrt{\frac{3}{7}}$
1 $\frac{3}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$-\sqrt{\frac{3}{28}}$	$-\sqrt{\frac{1}{7}}$
0 1 1 2 0 0	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{3}{7}}$

	64 2 2 0	64 2 1 0	27 2 1 0
1 $\frac{3}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{3}{14}}$	$\sqrt{\frac{2}{7}}$
1 $\frac{3}{2}$ $-\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{3}{14}}$	$-\sqrt{\frac{2}{7}}$
0 1 0 2 0 0	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{3}{7}}$

	64 2 2 -1	64 2 1 -1	27 2 1 -1
1 $\frac{3}{2}$ $-\frac{1}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$\sqrt{\frac{3}{28}}$	$\sqrt{\frac{1}{7}}$
1 $\frac{3}{2}$ $-\frac{3}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{9}{28}}$	$-\sqrt{\frac{3}{7}}$
0 1 -1 2 0 0	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{3}{7}}$

	64 2 2 -2
1 $\frac{3}{2}$ $-\frac{3}{2}$ 1 $\frac{1}{2}$ $-\frac{1}{2}$	1

$10\otimes\overline{10}$

	64 3 $\frac{3}{2}$ $\frac{3}{2}$
1 $\frac{3}{2}$ $\frac{3}{2}$ 2 0 0	1

	64 3 $\frac{3}{2}$ $\frac{1}{2}$
1 $\frac{3}{2}$ $\frac{1}{2}$ 2 0 0	1

	64 3 $\frac{3}{2}$ $-\frac{1}{2}$
1 $\frac{3}{2}$ $-\frac{1}{2}$ 2 0 0	1

	64 3 $\frac{3}{2}$ $-\frac{3}{2}$
1 $\frac{3}{2}$ $-\frac{3}{2}$ 2 0 0	1

TABLE V (*Continued*)

$10 \otimes \overline{10}$	64
	0
	3
	3
$1\ \frac{3}{2}\ \frac{3}{2}\quad -1\ \frac{3}{2}\ \frac{3}{2}$	1

$10 \otimes \overline{10}$	64	64	27
	0	0	0
	3	2	2
	2	2	2
$1\ \frac{3}{2}\ \frac{3}{2}\quad -1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{3}{7}}$
$1\ \frac{3}{2}\ \frac{1}{2}\quad -1\ \frac{3}{2}\ \frac{3}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{14}}$	$-\sqrt{\frac{3}{7}}$
$0\ 1\ 1\quad 0\ 1\ 1$	0	$\sqrt{\frac{6}{7}}$	$-\sqrt{\frac{1}{7}}$

$10 \otimes \overline{10}$	64	64	27	64	27	8
	0	0	0	0	0	0
	3	2	2	1	1	1
	1	1	1	1	1	1
$1\ \frac{3}{2}\ \frac{3}{2}\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{3}{7}}$	$\sqrt{\frac{1}{70}}$	$\sqrt{\frac{3}{35}}$	$\sqrt{\frac{1}{5}}$
$1\ \frac{3}{2}\ \frac{1}{2}\quad -1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{3}{5}}$	0	0	$-\sqrt{\frac{2}{105}}$	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{4}{15}}$
$1\ \frac{3}{2}\ -\frac{1}{2}\quad -1\ \frac{3}{2}\ \frac{3}{2}$	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{1}{14}}$	$-\sqrt{\frac{3}{7}}$	$\sqrt{\frac{1}{70}}$	$\sqrt{\frac{3}{35}}$	$\sqrt{\frac{1}{5}}$
$0\ 1\ 1\quad 0\ 1\ 0$	0	$\sqrt{\frac{3}{7}}$	$-\sqrt{\frac{1}{14}}$	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{9}{70}}$	$-\sqrt{\frac{2}{15}}$
$0\ 1\ 0\quad 0\ 1\ 1$	0	$\sqrt{\frac{3}{7}}$	$-\sqrt{\frac{1}{14}}$	$-\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{9}{70}}$	$\sqrt{\frac{2}{15}}$
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 1\ \frac{1}{2}\ \frac{1}{2}$	0	0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{16}{35}}$	$\sqrt{\frac{1}{15}}$

$10 \otimes \overline{10}$	64	64	27	64	27	8	64	27	8	1
	0	0	0	0	0	0	0	0	0	0
	3	2	2	1	1	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
$1\ \frac{3}{2}\ \frac{3}{2}\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{1}{20}}$	$\sqrt{\frac{1}{28}}$	$\sqrt{\frac{3}{14}}$	$\sqrt{\frac{3}{140}}$	$\sqrt{\frac{9}{70}}$	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{1}{140}}$	$\sqrt{\frac{3}{70}}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{10}}$
$1\ \frac{3}{2}\ \frac{1}{2}\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{9}{20}}$	$\sqrt{\frac{1}{28}}$	$\sqrt{\frac{3}{14}}$	$-\sqrt{\frac{1}{420}}$	$-\sqrt{\frac{1}{70}}$	$-\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{1}{140}}$	$-\sqrt{\frac{3}{70}}$	$-\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{1}{10}}$
$1\ \frac{3}{2}\ -\frac{1}{2}\quad -1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{9}{20}}$	$-\sqrt{\frac{1}{28}}$	$-\sqrt{\frac{3}{14}}$	$-\sqrt{\frac{1}{420}}$	$-\sqrt{\frac{1}{70}}$	$-\sqrt{\frac{1}{30}}$	$\sqrt{\frac{1}{140}}$	$\sqrt{\frac{3}{70}}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{10}}$
$1\ \frac{3}{2}\ -\frac{3}{2}\quad -1\ \frac{3}{2}\ \frac{3}{2}$	$\sqrt{\frac{1}{20}}$	$-\sqrt{\frac{1}{28}}$	$-\sqrt{\frac{3}{14}}$	$\sqrt{\frac{3}{140}}$	$\sqrt{\frac{9}{70}}$	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{1}{140}}$	$-\sqrt{\frac{3}{70}}$	$-\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{1}{10}}$
$0\ 1\ 1\quad 0\ 1\ -1$	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{42}}$	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{9}{70}}$	$-\sqrt{\frac{2}{15}}$	$\sqrt{\frac{4}{35}}$	$\sqrt{\frac{5}{42}}$	0	$-\sqrt{\frac{1}{10}}$
$0\ 1\ 0\quad 0\ 1\ 0$	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{2}{21}}$	0	0	0	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{5}{42}}$	0	$\sqrt{\frac{1}{10}}$
$0\ 1\ -1\quad 0\ 1\ 1$	0	$\sqrt{\frac{1}{7}}$	$-\sqrt{\frac{1}{42}}$	$-\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{9}{70}}$	$\sqrt{\frac{2}{15}}$	$\sqrt{\frac{4}{35}}$	$\sqrt{\frac{5}{42}}$	0	$-\sqrt{\frac{1}{10}}$
$-1\ \frac{1}{2}\ \frac{1}{2}\quad 1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{8}{35}}$	$\sqrt{\frac{1}{30}}$	$\sqrt{\frac{9}{35}}$	$-\sqrt{\frac{3}{70}}$	$-\sqrt{\frac{1}{10}}$	$\sqrt{\frac{1}{10}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 1\ \frac{1}{2}\ \frac{1}{2}$	0	0	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{8}{35}}$	$\sqrt{\frac{1}{30}}$	$-\sqrt{\frac{9}{35}}$	$\sqrt{\frac{3}{70}}$	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{1}{10}}$
$-2\ 0\ 0\quad 2\ 0\ 0$	0	0	0	0	0	0	$\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{27}{70}}$	$\sqrt{\frac{2}{5}}$	$-\sqrt{\frac{1}{10}}$

$10 \otimes \overline{10}$	64	64	27	64	27	8
	0	0	0	0	0	0
	3	2	2	1	1	1
	-1	-1	-1	-1	-1	-1
$1\ \frac{3}{2}\ \frac{1}{2}\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{1}{5}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{3}{7}}$	$\sqrt{\frac{1}{70}}$	$\sqrt{\frac{3}{35}}$	$\sqrt{\frac{1}{5}}$
$1\ \frac{3}{2}\ -\frac{1}{2}\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	0	0	$-\sqrt{\frac{2}{105}}$	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{4}{15}}$
$1\ \frac{3}{2}\ -\frac{3}{2}\quad -1\ \frac{3}{2}\ \frac{1}{2}$	$\sqrt{\frac{1}{5}}$	$-\sqrt{\frac{1}{14}}$	$-\sqrt{\frac{3}{7}}$	$\sqrt{\frac{1}{70}}$	$\sqrt{\frac{3}{35}}$	$\sqrt{\frac{1}{5}}$
$0\ 1\ 0\quad 0\ 1\ -1$	0	$\sqrt{\frac{3}{7}}$	$-\sqrt{\frac{1}{14}}$	$\sqrt{\frac{5}{21}}$	$\sqrt{\frac{9}{70}}$	$-\sqrt{\frac{2}{15}}$
$0\ 1\ -1\quad 0\ 1\ 0$	0	$\sqrt{\frac{3}{7}}$	$-\sqrt{\frac{1}{14}}$	$-\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{9}{70}}$	$\sqrt{\frac{2}{15}}$
$-1\ \frac{1}{2}\ -\frac{1}{2}\quad 1\ \frac{1}{2}\ -\frac{1}{2}$	0	0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{16}{35}}$	$\sqrt{\frac{1}{15}}$

$10 \otimes \overline{10}$	64	64	27
	0	0	0
	3	2	2
	-2	-2	-2
$1\ \frac{3}{2}\ -\frac{1}{2}\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{3}{7}}$
$1\ \frac{3}{2}\ -\frac{3}{2}\quad -1\ \frac{3}{2}\ -\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{1}{14}}$	$-\sqrt{\frac{3}{7}}$
$0\ 1\ -1\quad 0\ 1\ -1$	0	$\sqrt{\frac{6}{7}}$	$-\sqrt{\frac{1}{7}}$

$10 \otimes \overline{10}$	64
	0
	3
	-3
$1\ \frac{3}{2}\ -\frac{3}{2}\quad -1\ \frac{3}{2}\ -\frac{3}{2}$	1

TABLE V (*Continued*)

$\underline{10} \otimes \underline{\overline{10}}$

		64 −1 $\frac{5}{2}$ $\frac{5}{2}$
0 1 1	−1 $\frac{3}{2}$ $\frac{3}{2}$	1

		64 −1 $\frac{5}{2}$ $\frac{3}{2}$	64 −1 $\frac{3}{2}$ $\frac{3}{2}$	27 −1 $\frac{3}{2}$ $\frac{3}{2}$
0 1 1	−1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$\sqrt{\frac{4}{35}}$	$\sqrt{\frac{2}{7}}$
0 1 0	−1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{2}{5}}$	$-\sqrt{\frac{6}{35}}$	$-\sqrt{\frac{3}{7}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$	0 1 1	0	$\sqrt{\frac{5}{7}}$	$-\sqrt{\frac{2}{7}}$

		64 −1 $\frac{5}{2}$ $\frac{1}{2}$	64 −1 $\frac{3}{2}$ $\frac{1}{2}$	27 −1 $\frac{3}{2}$ $\frac{1}{2}$	64 −1 $\frac{1}{2}$ $\frac{1}{2}$	27 −1 $\frac{1}{2}$ $\frac{1}{2}$	8 −1 $\frac{1}{2}$ $\frac{1}{2}$
0 1 1	−1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{10}}$	$\sqrt{\frac{16}{105}}$	$\sqrt{\frac{8}{21}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{8}{105}}$	$\sqrt{\frac{1}{15}}$
0 1 0	−1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$-\sqrt{\frac{2}{105}}$	$-\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{16}{105}}$	$-\sqrt{\frac{2}{15}}$
0 1 −1	−1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{1}{10}}$	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{2}{7}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{8}{35}}$	$\sqrt{\frac{1}{5}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$	0 1 0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{4}{21}}$	$\sqrt{\frac{4}{21}}$	$\sqrt{\frac{1}{105}}$	$-\sqrt{\frac{2}{15}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$	0 1 1	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{2}{21}}$	$-\sqrt{\frac{8}{21}}$	$-\sqrt{\frac{2}{105}}$	$\sqrt{\frac{4}{15}}$
−2 0 0	1 $\frac{1}{2}$ $\frac{1}{2}$	0	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{18}{35}}$	$\sqrt{\frac{1}{5}}$

		64 −1 $\frac{5}{2}$ $-\frac{1}{2}$	64 −1 $\frac{3}{2}$ $-\frac{1}{2}$	27 −1 $\frac{3}{2}$ $-\frac{1}{2}$	64 −1 $\frac{1}{2}$ $-\frac{1}{2}$	27 −1 $\frac{1}{2}$ $-\frac{1}{2}$	8 −1 $\frac{1}{2}$ $-\frac{1}{2}$
0 1 1	−1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{10}}$	$\sqrt{\frac{4}{35}}$	$\sqrt{\frac{2}{7}}$	$\sqrt{\frac{1}{14}}$	$\sqrt{\frac{8}{35}}$	$\sqrt{\frac{1}{5}}$
0 1 0	−1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$\sqrt{\frac{2}{105}}$	$\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{1}{21}}$	$-\sqrt{\frac{16}{105}}$	$-\sqrt{\frac{2}{15}}$
0 1 −1	−1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{10}}$	$-\sqrt{\frac{16}{105}}$	$-\sqrt{\frac{8}{21}}$	$\sqrt{\frac{1}{42}}$	$\sqrt{\frac{8}{105}}$	$\sqrt{\frac{1}{15}}$
−1 $\frac{1}{2}$ $\frac{1}{2}$	0 1 −1	0	$\sqrt{\frac{5}{21}}$	$-\sqrt{\frac{2}{21}}$	$\sqrt{\frac{8}{21}}$	$\sqrt{\frac{2}{105}}$	$-\sqrt{\frac{4}{15}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$	0 1 0	0	$\sqrt{\frac{10}{21}}$	$-\sqrt{\frac{4}{21}}$	$-\sqrt{\frac{4}{21}}$	$-\sqrt{\frac{1}{105}}$	$\sqrt{\frac{2}{15}}$
−2 0 0	1 $\frac{1}{2}$ $-\frac{1}{2}$	0	0	0	$\sqrt{\frac{2}{7}}$	$-\sqrt{\frac{18}{35}}$	$\sqrt{\frac{1}{5}}$

		64 −1 $\frac{5}{2}$ $-\frac{3}{2}$	64 −1 $\frac{3}{2}$ $-\frac{3}{2}$	27 −1 $\frac{3}{2}$ $-\frac{3}{2}$
0 1 0	−1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{2}{5}}$	$\sqrt{\frac{6}{35}}$	$\sqrt{\frac{3}{7}}$
0 1 −1	−1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{5}}$	$-\sqrt{\frac{4}{35}}$	$-\sqrt{\frac{2}{7}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$	0 1 −1	0	$\sqrt{\frac{5}{7}}$	$-\sqrt{\frac{2}{7}}$

		64 −1 $\frac{5}{2}$ $-\frac{5}{2}$
0 1 −1	−1 $\frac{3}{2}$ $-\frac{3}{2}$	1

$\underline{10} \otimes \underline{\overline{10}}$

		64 −2 2 2
−1 $\frac{1}{2}$ $\frac{1}{2}$	−1 $\frac{3}{2}$ $\frac{3}{2}$	1

		64 −2 2 1	64 −2 1 1	27 −2 1 1
−1 $\frac{1}{2}$ $\frac{1}{2}$	−1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$\sqrt{\frac{3}{28}}$	$\sqrt{\frac{1}{7}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$	−1 $\frac{3}{2}$ $\frac{3}{2}$	$\sqrt{\frac{1}{4}}$	$-\sqrt{\frac{9}{28}}$	$-\sqrt{\frac{3}{7}}$
−2 0 0	0 1 1	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{3}{7}}$

		64 −2 2 0	64 −2 1 0	27 −2 1 0
−1 $\frac{1}{2}$ $\frac{1}{2}$	−1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$\sqrt{\frac{3}{14}}$	$\sqrt{\frac{2}{7}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$	−1 $\frac{3}{2}$ $\frac{1}{2}$	$\sqrt{\frac{1}{2}}$	$-\sqrt{\frac{3}{14}}$	$-\sqrt{\frac{2}{7}}$
−2 0 0	0 1 0	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{3}{7}}$

		64 −2 2 −1	64 −2 1 −1	27 −2 1 −1
−1 $\frac{1}{2}$ $\frac{1}{2}$	−1 $\frac{3}{2}$ $-\frac{3}{2}$	$\sqrt{\frac{1}{4}}$	$\sqrt{\frac{9}{28}}$	$\sqrt{\frac{3}{7}}$
−1 $\frac{1}{2}$ $-\frac{1}{2}$	−1 $\frac{3}{2}$ $-\frac{1}{2}$	$\sqrt{\frac{3}{4}}$	$-\sqrt{\frac{3}{28}}$	$-\sqrt{\frac{1}{7}}$
−2 0 0	0 1 −1	0	$\sqrt{\frac{4}{7}}$	$-\sqrt{\frac{3}{7}}$

		64 −2 2 −2
−1 $\frac{1}{2}$ $-\frac{1}{2}$	−1 $\frac{3}{2}$ $-\frac{3}{2}$	1

$\underline{10} \otimes \underline{\overline{10}}$

		64 −3 $\frac{3}{2}$ $\frac{3}{2}$
−2 0 0	−1 $\frac{3}{2}$ $\frac{3}{2}$	1

		64 −3 $\frac{3}{2}$ $\frac{1}{2}$
−2 0 0	−1 $\frac{3}{2}$ $\frac{1}{2}$	1

		64 −3 $\frac{3}{2}$ $-\frac{1}{2}$
−2 0 0	−1 $\frac{3}{2}$ $-\frac{1}{2}$	1

		64 −3 $\frac{3}{2}$ $-\frac{3}{2}$
−2 0 0	−1 $\frac{3}{2}$ $-\frac{3}{2}$	1

PHYSICAL STATES

The states we use enjoy the standard (Condon and Shortley[7]) SU_2 phase conventions. This means that not all of the mathematical states will have the phases which would be most convenient for SU_3. For example, it would be convenient for the assignment of the pseudoscalar mesons to an octet to be such that the octet was self-adjoint. But because of our convention for the complex conjugate state there will be some minus signs which enter. These minus signs would be compensated if we made the following assignment of physical states to our formal states:

$$|K^0\rangle = |\mathbf{8}\ 1\ \tfrac{1}{2}\ -\tfrac{1}{2}\rangle, \qquad |K^+\rangle = |\mathbf{8}\ 1\ \tfrac{1}{2}\ \tfrac{1}{2}\rangle$$

$$|\pi^-\rangle = |\mathbf{8}\ 0\ 1\ -1\rangle, \qquad |\pi^0\rangle = |\mathbf{8}\ 0\ 1\ 0\rangle,$$

$$|\pi^+\rangle = -|\mathbf{8}\ 0\ 1\ 1\rangle, \qquad |\eta\rangle = |\mathbf{8}\ 0\ 0\ 0\rangle,$$

$$|K^-\rangle = -|\mathbf{8}\ -1\ \tfrac{1}{2}\ -\tfrac{1}{2}\rangle, \qquad |\bar{K}^0\rangle = |\mathbf{8}\ -1\ \tfrac{1}{2}\ \tfrac{1}{2}\rangle.$$

This difference of assignment is more clear if we examine the unitary singlet resulting from the product $\mathbf{8}\otimes\mathbf{8}$. As the appropriate column of Table II shows, there are a number of minus signs which occur when $|\mathbf{1}\ 0\ 0\ 0\rangle$ is written as a sum of products $|\mathbf{8}\ y\ i\ i_3\rangle\otimes|\mathbf{8}\ -y\ i\ -i_3\rangle$. These minus signs would also be compensated by the assignment above, making the unitary singlet a completely symmetric combination of the physical states. Since under the usual conventions for SU_3 tensors the unitary singlet is also completely symmetric, we see our assignment above is just the relation between our SU_2-convention states and the usual SU_3 tensors.

For many applications it is more convenient to simply make the assignment of physical states directly to the mathematical states with all plus signs and to remember that the octet, indeed even the SU_2 triplet (π), is not manifestly self-adjoint.

Note added in proof. Dr. P. Tarjanne has kindly informed us of his tables of isoscalar factors and Clebsch–Gordan coefficients available as Carnegie Institute of Technology Reports NYO–9290 and NYO–9290A (unpublished).

[7] E. U. Condon and G. H. Shortley, *Theory of Atomic Spectra* (Cambridge University Press, Cambridge, England, 1935).

ACKNOWLEDGMENTS

We thank Dr. R. J. Oakes for a copy of his tables and for several discussions. We are especially indebted to Mrs. Dorothy McGrath for her assistance in preparing the tables for publication.