No. 8 D_{2h} mmm [orthorhombic] (axial)

表 1 rank 0

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
1	A_u	Au	–	–	$\mathbb{G}_0^{(h,A_u)}$	Gh(0, Au, ,)	C_0

表 2 rank 1

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
2	B_{1g}	B1g	–	–	$\mathbb{G}_1^{(h,B_{1g})}$	Gh(1, B1g, ,)	C_0
3	B_{2g}	B2g	–	–	$\mathbb{G}_1^{(h,B_{2g})}$	Gh(1, B2g, ,)	S_1
4	B_{3g}	B3g	–	–	$\mathbb{G}_1^{(h,B_{3g})}$	Gh(1, B3g, ,)	C_1

表 3 rank 2

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
5	A_u	Au	1	–	$\mathbb{G}_2^{(h,A_u,1)}$	Gh(2, Au, 1,)	C_0
6	A_u	Au	2	–	$\mathbb{G}_2^{(h,A_u,2)}$	Gh(2, Au, 2,)	C_2
7	B_{1u}	B1u	–	–	$\mathbb{G}_2^{(h,B_{1u})}$	Gh(2, B1u, ,)	S_2
8	B_{2u}	B2u	–	–	$\mathbb{G}_2^{(h,B_{2u})}$	Gh(2, B2u, ,)	C_1
9	B_{3u}	B3u	–	–	$\mathbb{G}_2^{(h,B_{3u})}$	Gh(2, B3u, ,)	S_1

表 4 rank 3

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
10	A_g	Ag	–	–	$\mathbb{G}_3^{(h,A_g)}$	Gh(3, Ag, ,)	S_2
11	B_{1g}	B1g	1	–	$\mathbb{G}_3^{(h,B_{1g},1)}$	Gh(3, B1g, 1,)	C_0
12	B_{1g}	B1g	2	–	$\mathbb{G}_3^{(h,B_{1g},2)}$	Gh(3, B1g, 2,)	C_2
13	B_{2g}	B2g	1	–	$\mathbb{G}_3^{(h,B_{2g},1)}$	Gh(3, B2g, 1,)	$-\frac{\sqrt{6}S_1}{4} - \frac{\sqrt{10}S_3}{4}$
14	B_{2g}	B2g	2	–	$\mathbb{G}_3^{(h,B_{2g},2)}$	Gh(3, B2g, 2,)	$\frac{\sqrt{10}S_1}{4} - \frac{\sqrt{6}S_3}{4}$
15	B_{3g}	B3g	1	–	$\mathbb{G}_3^{(h,B_{3g},1)}$	Gh(3, B3g, 1,)	$-\frac{\sqrt{6}C_1}{4} + \frac{\sqrt{10}C_3}{4}$
16	B_{3g}	B3g	2	–	$\mathbb{G}_3^{(h,B_{3g},2)}$	Gh(3, B3g, 2,)	$-\frac{\sqrt{10}C_1}{4} - \frac{\sqrt{6}C_3}{4}$

表 5 rank 4

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
17	A_u	Au	1	–	$\mathbb{G}_4^{(h,A_u,1)}$	Gh(4, Au, 1,)	$\frac{\sqrt{21}C_0}{6} + \frac{\sqrt{15}C_4}{6}$
18	A_u	Au	2	–	$\mathbb{G}_4^{(h,A_u,2)}$	Gh(4, Au, 2,)	$\frac{\sqrt{15}C_0}{6} - \frac{\sqrt{21}C_4}{6}$
19	A_u	Au	3	–	$\mathbb{G}_4^{(h,A_u,3)}$	Gh(4, Au, 3,)	$-C_2$
20	B_{1u}	B1u	1	–	$\mathbb{G}_4^{(h,B_{1u},1)}$	Gh(4, B1u, 1,)	S_4
21	B_{1u}	B1u	2	–	$\mathbb{G}_4^{(h,B_{1u},2)}$	Gh(4, B1u, 2,)	S_2
22	B_{2u}	B2u	1	–	$\mathbb{G}_4^{(h,B_{2u},1)}$	Gh(4, B2u, 1,)	$\frac{\sqrt{14}C_1}{4} - \frac{\sqrt{2}C_3}{4}$
23	B_{2u}	B2u	2	–	$\mathbb{G}_4^{(h,B_{2u},2)}$	Gh(4, B2u, 2,)	$-\frac{\sqrt{2}C_1}{4} - \frac{\sqrt{14}C_3}{4}$
24	B_{3u}	B3u	1	–	$\mathbb{G}_4^{(h,B_{3u},1)}$	Gh(4, B3u, 1,)	$-\frac{\sqrt{14}S_1}{4} - \frac{\sqrt{2}S_3}{4}$
25	B_{3u}	B3u	2	–	$\mathbb{G}_4^{(h,B_{3u},2)}$	Gh(4, B3u, 2,)	$-\frac{\sqrt{2}S_1}{4} + \frac{\sqrt{14}S_3}{4}$

表 6　rank 5

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
26	A_g	Ag	1	–	$\mathbb{G}_5^{(h,A_g,1)}$	Gh(5, Ag, 1,)	S_4
27	A_g	Ag	2	–	$\mathbb{G}_5^{(h,A_g,2)}$	Gh(5, Ag, 2,)	$-S_2$
28	B_{1g}	B1g	1	–	$\mathbb{G}_5^{(h,B_{1g},1)}$	Gh(5, B1g, 1,)	C_0
29	B_{1g}	B1g	2	–	$\mathbb{G}_5^{(h,B_{1g},2)}$	Gh(5, B1g, 2,)	C_4
30	B_{1g}	B1g	3	–	$\mathbb{G}_5^{(h,B_{1g},3)}$	Gh(5, B1g, 3,)	C_2
31	B_{2g}	B2g	1	–	$\mathbb{G}_5^{(h,B_{2g},1)}$	Gh(5, B2g, 1,)	$\frac{\sqrt{15}S_1}{8} + \frac{\sqrt{70}S_3}{16} + \frac{3\sqrt{14}S_5}{16}$
32	B_{2g}	B2g	2	–	$\mathbb{G}_5^{(h,B_{2g},2)}$	Gh(5, B2g, 2,)	$\frac{\sqrt{21}S_1}{8} - \frac{9\sqrt{2}S_3}{16} + \frac{\sqrt{10}S_5}{16}$
33	B_{2g}	B2g	3	–	$\mathbb{G}_5^{(h,B_{2g},3)}$	Gh(5, B2g, 3,)	$-\frac{\sqrt{7}S_1}{4} - \frac{\sqrt{6}S_3}{8} + \frac{\sqrt{30}S_5}{8}$
34	B_{3g}	B3g	1	–	$\mathbb{G}_5^{(h,B_{3g},1)}$	Gh(5, B3g, 1,)	$\frac{\sqrt{15}C_1}{8} - \frac{\sqrt{70}C_3}{16} + \frac{3\sqrt{14}C_5}{16}$
35	B_{3g}	B3g	2	–	$\mathbb{G}_5^{(h,B_{3g},2)}$	Gh(5, B3g, 2,)	$\frac{\sqrt{21}C_1}{8} + \frac{9\sqrt{2}C_3}{16} + \frac{\sqrt{10}C_5}{16}$
36	B_{3g}	B3g	3	–	$\mathbb{G}_5^{(h,B_{3g},3)}$	Gh(5, B3g, 3,)	$\frac{\sqrt{7}C_1}{4} - \frac{\sqrt{6}C_3}{8} - \frac{\sqrt{30}C_5}{8}$

表 7　rank 6

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
37	A_u	Au	1	–	$\mathbb{G}_6^{(h,A_u,1)}$	Gh(6, Au, 1,)	$\frac{\sqrt{2}C_0}{4} - \frac{\sqrt{14}C_4}{4}$
38	A_u	Au	2	–	$\mathbb{G}_6^{(h,A_u,2)}$	Gh(6, Au, 2,)	$\frac{\sqrt{11}C_2}{4} - \frac{\sqrt{5}C_6}{4}$
39	A_u	Au	3	–	$\mathbb{G}_6^{(h,A_u,3)}$	Gh(6, Au, 3,)	$\frac{\sqrt{14}C_0}{4} + \frac{\sqrt{2}C_4}{4}$
40	A_u	Au	4	–	$\mathbb{G}_6^{(h,A_u,4)}$	Gh(6, Au, 4,)	$\frac{\sqrt{5}C_2}{4} + \frac{\sqrt{11}C_6}{4}$
41	B_{1u}	B1u	1	–	$\mathbb{G}_6^{(h,B_{1u},1)}$	Gh(6, B1u, 1,)	S_4
42	B_{1u}	B1u	2	–	$\mathbb{G}_6^{(h,B_{1u},2)}$	Gh(6, B1u, 2,)	S_6
43	B_{1u}	B1u	3	–	$\mathbb{G}_6^{(h,B_{1u},3)}$	Gh(6, B1u, 3,)	S_2
44	B_{2u}	B2u	1	–	$\mathbb{G}_6^{(h,B_{2u},1)}$	Gh(6, B2u, 1,)	$-\frac{\sqrt{3}C_1}{4} - \frac{\sqrt{30}C_3}{8} + \frac{\sqrt{22}C_5}{8}$
45	B_{2u}	B2u	2	–	$\mathbb{G}_6^{(h,B_{2u},2)}$	Gh(6, B2u, 2,)	$\frac{3\sqrt{22}C_1}{16} - \frac{\sqrt{55}C_3}{16} + \frac{\sqrt{3}C_5}{16}$
46	B_{2u}	B2u	3	–	$\mathbb{G}_6^{(h,B_{2u},3)}$	Gh(6, B2u, 3,)	$\frac{\sqrt{10}C_1}{16} + \frac{9C_3}{16} + \frac{\sqrt{165}C_5}{16}$
47	B_{3u}	B3u	1	–	$\mathbb{G}_6^{(h,B_{3u},1)}$	Gh(6, B3u, 1,)	$\frac{\sqrt{3}S_1}{4} - \frac{\sqrt{30}S_3}{8} - \frac{\sqrt{22}S_5}{8}$
48	B_{3u}	B3u	2	–	$\mathbb{G}_6^{(h,B_{3u},2)}$	Gh(6, B3u, 2,)	$\frac{3\sqrt{22}S_1}{16} + \frac{\sqrt{55}S_3}{16} + \frac{\sqrt{3}S_5}{16}$
49	B_{3u}	B3u	3	–	$\mathbb{G}_6^{(h,B_{3u},3)}$	Gh(6, B3u, 3,)	$\frac{\sqrt{10}S_1}{16} - \frac{9S_3}{16} + \frac{\sqrt{165}S_5}{16}$

表 8　rank 7

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
50	A_g	Ag	1	–	$\mathbb{G}_7^{(h,A_g,1)}$	Gh(7, Ag, 1,)	$\frac{\sqrt{78}S_2}{12} + \frac{\sqrt{66}S_6}{12}$
51	A_g	Ag	2	–	$\mathbb{G}_7^{(h,A_g,2)}$	Gh(7, Ag, 2,)	S_4
52	A_g	Ag	3	–	$\mathbb{G}_7^{(h,A_g,3)}$	Gh(7, Ag, 3,)	$\frac{\sqrt{66}S_2}{12} - \frac{\sqrt{78}S_6}{12}$
53	B_{1g}	B1g	1	–	$\mathbb{G}_7^{(h,B_{1g},1)}$	Gh(7, B1g, 1,)	C_0
54	B_{1g}	B1g	2	–	$\mathbb{G}_7^{(h,B_{1g},2)}$	Gh(7, B1g, 2,)	C_4
55	B_{1g}	B1g	3	–	$\mathbb{G}_7^{(h,B_{1g},3)}$	Gh(7, B1g, 3,)	C_6
56	B_{1g}	B1g	4	–	$\mathbb{G}_7^{(h,B_{1g},4)}$	Gh(7, B1g, 4,)	C_2
57	B_{2g}	B2g	1	–	$\mathbb{G}_7^{(h,B_{2g},1)}$	Gh(7, B2g, 1,)	$-\frac{5\sqrt{7}S_1}{32} - \frac{3\sqrt{21}S_3}{32} - \frac{\sqrt{231}S_5}{32} - \frac{\sqrt{429}S_7}{32}$
58	B_{2g}	B2g	2	–	$\mathbb{G}_7^{(h,B_{2g},2)}$	Gh(7, B2g, 2,)	$-\frac{3\sqrt{33}S_1}{32} + \frac{\sqrt{11}S_3}{32} + \frac{25S_5}{32} - \frac{\sqrt{91}S_7}{32}$
59	B_{2g}	B2g	3	–	$\mathbb{G}_7^{(h,B_{2g},3)}$	Gh(7, B2g, 3,)	$\frac{\sqrt{858}S_1}{64} - \frac{3\sqrt{286}S_3}{64} + \frac{5\sqrt{26}S_5}{64} - \frac{\sqrt{14}S_7}{64}$
60	B_{2g}	B2g	4	–	$\mathbb{G}_7^{(h,B_{2g},4)}$	Gh(7, B2g, 4,)	$\frac{15\sqrt{6}S_1}{64} + \frac{19\sqrt{2}S_3}{64} + \frac{\sqrt{22}S_5}{64} - \frac{\sqrt{2002}S_7}{64}$
61	B_{3g}	B3g	1	–	$\mathbb{G}_7^{(h,B_{3g},1)}$	Gh(7, B3g, 1,)	$-\frac{5\sqrt{7}C_1}{32} + \frac{3\sqrt{21}C_3}{32} - \frac{\sqrt{231}C_5}{32} + \frac{\sqrt{429}C_7}{32}$
62	B_{3g}	B3g	2	–	$\mathbb{G}_7^{(h,B_{3g},2)}$	Gh(7, B3g, 2,)	$-\frac{3\sqrt{33}C_1}{32} - \frac{\sqrt{11}C_3}{32} + \frac{25C_5}{32} + \frac{\sqrt{91}C_7}{32}$
63	B_{3g}	B3g	3	–	$\mathbb{G}_7^{(h,B_{3g},3)}$	Gh(7, B3g, 3,)	$-\frac{\sqrt{858}C_1}{64} - \frac{3\sqrt{286}C_3}{64} - \frac{5\sqrt{26}C_5}{64} - \frac{\sqrt{14}C_7}{64}$
64	B_{3g}	B3g	4	–	$\mathbb{G}_7^{(h,B_{3g},4)}$	Gh(7, B3g, 4,)	$-\frac{15\sqrt{6}C_1}{64} + \frac{19\sqrt{2}C_3}{64} - \frac{\sqrt{22}C_5}{64} - \frac{\sqrt{2002}C_7}{64}$

表 9　rank 8

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
65	A_u	Au	1	–	$\mathbb{G}_8^{(h,A_u,1)}$	Gh(8, Au, 1,)	$\frac{\sqrt{33}C_0}{8} + \frac{\sqrt{21}C_4}{12} + \frac{\sqrt{195}C_8}{24}$
66	A_u	Au	2	–	$\mathbb{G}_8^{(h,A_u,2)}$	Gh(8, Au, 2,)	$-\frac{\sqrt{286}C_0}{32} + \frac{\sqrt{182}C_4}{16} + \frac{\sqrt{10}C_8}{32}$
67	A_u	Au	3	–	$\mathbb{G}_8^{(h,A_u,3)}$	Gh(8, Au, 3,)	C_6
68	A_u	Au	4	–	$\mathbb{G}_8^{(h,A_u,4)}$	Gh(8, Au, 4,)	$-\frac{\sqrt{210}C_0}{32} - \frac{\sqrt{330}C_4}{48} + \frac{\sqrt{6006}C_8}{96}$
69	A_u	Au	5	–	$\mathbb{G}_8^{(h,A_u,5)}$	Gh(8, Au, 5,)	C_2
70	B_{1u}	B1u	1	–	$\mathbb{G}_8^{(h,B_{1u},1)}$	Gh(8, B1u, 1,)	S_8
71	B_{1u}	B1u	2	–	$\mathbb{G}_8^{(h,B_{1u},2)}$	Gh(8, B1u, 2,)	S_4
72	B_{1u}	B1u	3	–	$\mathbb{G}_8^{(h,B_{1u},3)}$	Gh(8, B1u, 3,)	S_6
73	B_{1u}	B1u	4	–	$\mathbb{G}_8^{(h,B_{1u},4)}$	Gh(8, B1u, 4,)	S_2
74	B_{2u}	B2u	1	–	$\mathbb{G}_8^{(h,B_{2u},1)}$	Gh(8, B2u, 1,)	$\frac{\sqrt{715}C_1}{32} - \frac{\sqrt{273}C_3}{32} + \frac{\sqrt{35}C_5}{32} - \frac{C_7}{32}$
75	B_{2u}	B2u	2	–	$\mathbb{G}_8^{(h,B_{2u},2)}$	Gh(8, B2u, 2,)	$\frac{\sqrt{77}C_1}{32} + \frac{5\sqrt{15}C_3}{32} + \frac{3\sqrt{13}C_5}{32} - \frac{\sqrt{455}C_7}{32}$
76	B_{2u}	B2u	3	–	$\mathbb{G}_8^{(h,B_{2u},3)}$	Gh(8, B2u, 3,)	$-\frac{\sqrt{858}C_1}{64} - \frac{\sqrt{910}C_3}{64} + \frac{7\sqrt{42}C_5}{64} - \frac{3\sqrt{30}C_7}{64}$
77	B_{2u}	B2u	4	–	$\mathbb{G}_8^{(h,B_{2u},4)}$	Gh(8, B2u, 4,)	$-\frac{\sqrt{70}C_1}{64} - \frac{3\sqrt{66}C_3}{64} - \frac{\sqrt{1430}C_5}{64} - \frac{\sqrt{2002}C_7}{64}$
78	B_{3u}	B3u	1	–	$\mathbb{G}_8^{(h,B_{3u},1)}$	Gh(8, B3u, 1,)	$-\frac{\sqrt{715}S_1}{32} - \frac{\sqrt{273}S_3}{32} - \frac{\sqrt{35}S_5}{32} - \frac{S_7}{32}$
79	B_{3u}	B3u	2	–	$\mathbb{G}_8^{(h,B_{3u},2)}$	Gh(8, B3u, 2,)	$-\frac{\sqrt{77}S_1}{32} + \frac{5\sqrt{15}S_3}{32} - \frac{3\sqrt{13}S_5}{32} - \frac{\sqrt{455}S_7}{32}$
80	B_{3u}	B3u	3	–	$\mathbb{G}_8^{(h,B_{3u},3)}$	Gh(8, B3u, 3,)	$-\frac{\sqrt{858}S_1}{64} + \frac{\sqrt{910}S_3}{64} + \frac{7\sqrt{42}S_5}{64} + \frac{3\sqrt{30}S_7}{64}$
81	B_{3u}	B3u	4	–	$\mathbb{G}_8^{(h,B_{3u},4)}$	Gh(8, B3u, 4,)	$-\frac{\sqrt{70}S_1}{64} + \frac{3\sqrt{66}S_3}{64} - \frac{\sqrt{1430}S_5}{64} + \frac{\sqrt{2002}S_7}{64}$

表 10　rank 9

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
82	A_g	Ag	1	–	$\mathbb{G}_9^{(h,A_g,1)}$	Gh(9, Ag, 1,)	$\frac{\sqrt{102}S_4}{12} - \frac{\sqrt{42}S_8}{12}$
83	A_g	Ag	2	–	$\mathbb{G}_9^{(h,A_g,2)}$	Gh(9, Ag, 2,)	$\frac{\sqrt{3}S_2}{4} - \frac{\sqrt{13}S_6}{4}$
84	A_g	Ag	3	–	$\mathbb{G}_9^{(h,A_g,3)}$	Gh(9, Ag, 3,)	$\frac{\sqrt{42}S_4}{12} + \frac{\sqrt{102}S_8}{12}$
85	A_g	Ag	4	–	$\mathbb{G}_9^{(h,A_g,4)}$	Gh(9, Ag, 4,)	$-\frac{\sqrt{13}S_2}{4} - \frac{\sqrt{3}S_6}{4}$
86	B_{1g}	B1g	1	–	$\mathbb{G}_9^{(h,B_{1g},1)}$	Gh(9, B1g, 1,)	C_0
87	B_{1g}	B1g	2	–	$\mathbb{G}_9^{(h,B_{1g},2)}$	Gh(9, B1g, 2,)	C_8
88	B_{1g}	B1g	3	–	$\mathbb{G}_9^{(h,B_{1g},3)}$	Gh(9, B1g, 3,)	C_4
89	B_{1g}	B1g	4	–	$\mathbb{G}_9^{(h,B_{1g},4)}$	Gh(9, B1g, 4,)	C_6
90	B_{1g}	B1g	5	–	$\mathbb{G}_9^{(h,B_{1g},5)}$	Gh(9, B1g, 5,)	C_2
91	B_{2g}	B2g	1	–	$\mathbb{G}_9^{(h,B_{2g},1)}$	Gh(9, B2g, 1,)	$\frac{21\sqrt{5}S_1}{128} + \frac{\sqrt{2310}S_3}{128} + \frac{3\sqrt{286}S_5}{128} + \frac{3\sqrt{1430}S_7}{256} + \frac{\sqrt{24310}S_9}{256}$
92	B_{2g}	B2g	2	–	$\mathbb{G}_9^{(h,B_{2g},2)}$	Gh(9, B2g, 2,)	$\frac{\sqrt{2431}S_1}{128} - \frac{\sqrt{9282}S_3}{128} + \frac{5\sqrt{170}S_5}{128} - \frac{7\sqrt{34}S_7}{256} + \frac{3\sqrt{2}S_9}{256}$
93	B_{2g}	B2g	3	–	$\mathbb{G}_9^{(h,B_{2g},3)}$	Gh(9, B2g, 3,)	$\frac{\sqrt{1001}S_1}{64} + \frac{\sqrt{78}S_3}{64} - \frac{3\sqrt{70}S_5}{64} - \frac{23\sqrt{14}S_7}{128} + \frac{3\sqrt{238}S_9}{128}$
94	B_{2g}	B2g	4	–	$\mathbb{G}_9^{(h,B_{2g},4)}$	Gh(9, B2g, 4,)	$-\frac{\sqrt{858}S_1}{64} + \frac{\sqrt{91}S_3}{32} + \frac{5\sqrt{15}S_5}{32} - \frac{21\sqrt{3}S_7}{64} + \frac{\sqrt{51}S_9}{64}$
95	B_{2g}	B2g	5	–	$\mathbb{G}_9^{(h,B_{2g},5)}$	Gh(9, B2g, 5,)	$-\frac{7\sqrt{22}S_1}{64} - \frac{3\sqrt{21}S_3}{32} - \frac{\sqrt{65}S_5}{32} + \frac{\sqrt{13}S_7}{64} + \frac{3\sqrt{221}S_9}{64}$
96	B_{3g}	B3g	1	–	$\mathbb{G}_9^{(h,B_{3g},1)}$	Gh(9, B3g, 1,)	$\frac{21\sqrt{5}C_1}{128} - \frac{\sqrt{2310}C_3}{128} + \frac{3\sqrt{286}C_5}{128} - \frac{3\sqrt{1430}C_7}{256} + \frac{\sqrt{24310}C_9}{256}$
97	B_{3g}	B3g	2	–	$\mathbb{G}_9^{(h,B_{3g},2)}$	Gh(9, B3g, 2,)	$\frac{\sqrt{2431}C_1}{128} + \frac{\sqrt{9282}C_3}{128} + \frac{5\sqrt{170}C_5}{128} + \frac{7\sqrt{34}C_7}{256} + \frac{3\sqrt{2}C_9}{256}$
98	B_{3g}	B3g	3	–	$\mathbb{G}_9^{(h,B_{3g},3)}$	Gh(9, B3g, 3,)	$\frac{\sqrt{1001}C_1}{64} - \frac{\sqrt{78}C_3}{64} - \frac{3\sqrt{70}C_5}{64} + \frac{23\sqrt{14}C_7}{128} + \frac{3\sqrt{238}C_9}{128}$
99	B_{3g}	B3g	4	–	$\mathbb{G}_9^{(h,B_{3g},4)}$	Gh(9, B3g, 4,)	$\frac{\sqrt{858}C_1}{64} + \frac{\sqrt{91}C_3}{32} - \frac{5\sqrt{15}C_5}{32} - \frac{21\sqrt{3}C_7}{64} - \frac{\sqrt{51}C_9}{64}$
100	B_{3g}	B3g	5	–	$\mathbb{G}_9^{(h,B_{3g},5)}$	Gh(9, B3g, 5,)	$\frac{7\sqrt{22}C_1}{64} - \frac{3\sqrt{21}C_3}{32} + \frac{\sqrt{65}C_5}{32} + \frac{\sqrt{13}C_7}{64} - \frac{3\sqrt{221}C_9}{64}$

表 11　rank 10

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
101	A_u	Au	1	–	$\mathbb{G}_{10}^{(h,A_u,1)}$	Gh(10, Au, 1,)	$\frac{\sqrt{390}C_0}{48} - \frac{\sqrt{22}C_4}{8} - \frac{\sqrt{1122}C_8}{48}$
102	A_u	Au	2	–	$\mathbb{G}_{10}^{(h,A_u,2)}$	Gh(10, Au, 2,)	$-\frac{\sqrt{85}C_{10}}{16} + \frac{\sqrt{1482}C_2}{48} + \frac{\sqrt{57}C_6}{48}$
103	A_u	Au	3	–	$\mathbb{G}_{10}^{(h,A_u,3)}$	Gh(10, Au, 3,)	$\frac{11\sqrt{420189}C_0}{8988} + \frac{\sqrt{827645}C_4}{1498} - \frac{\sqrt{146055}C_8}{8988}$
104	A_u	Au	4	–	$\mathbb{G}_{10}^{(h,A_u,4)}$	Gh(10, Au, 4,)	$\frac{\sqrt{370006}C_{10}}{749} + \frac{\sqrt{190995}C_2}{749}$
105	A_u	Au	5	–	$\mathbb{G}_{10}^{(h,A_u,5)}$	Gh(10, Au, 5,)	$\frac{3\sqrt{3213210}C_0}{11984} - \frac{83\sqrt{1498}C_4}{5992} + \frac{31\sqrt{76398}C_8}{11984}$
106	A_u	Au	6	–	$\mathbb{G}_{10}^{(h,A_u,6)}$	Gh(10, Au, 6,)	$\frac{\sqrt{1209635}C_{10}}{11984} - \frac{19\sqrt{58422}C_2}{35952} + \frac{\sqrt{2247}C_6}{48}$
107	B_{1u}	B1u	1	–	$\mathbb{G}_{10}^{(h,B_{1u},1)}$	Gh(10, B1u, 1,)	S_8
108	B_{1u}	B1u	2	–	$\mathbb{G}_{10}^{(h,B_{1u},2)}$	Gh(10, B1u, 2,)	S_4
109	B_{1u}	B1u	3	–	$\mathbb{G}_{10}^{(h,B_{1u},3)}$	Gh(10, B1u, 3,)	S_{10}
110	B_{1u}	B1u	4	–	$\mathbb{G}_{10}^{(h,B_{1u},4)}$	Gh(10, B1u, 4,)	S_6
111	B_{1u}	B1u	5	–	$\mathbb{G}_{10}^{(h,B_{1u},5)}$	Gh(10, B1u, 5,)	S_2
112	B_{2u}	B2u	1	–	$\mathbb{G}_{10}^{(h,B_{2u},1)}$	Gh(10, B2u, 1,)	$-\frac{\sqrt{221}C_1}{32} - \frac{\sqrt{102}C_3}{32} + \frac{\sqrt{510}C_5}{32} - \frac{11\sqrt{6}C_7}{64} + \frac{\sqrt{38}C_9}{64}$
113	B_{2u}	B2u	2	–	$\mathbb{G}_{10}^{(h,B_{2u},2)}$	Gh(10, B2u, 2,)	$-\frac{\sqrt{39}C_1}{32} - \frac{11\sqrt{2}C_3}{32} - \frac{5\sqrt{10}C_5}{32} - \frac{\sqrt{34}C_7}{64} + \frac{\sqrt{1938}C_9}{64}$
114	B_{2u}	B2u	3	–	$\mathbb{G}_{10}^{(h,B_{2u},3)}$	Gh(10, B2u, 3,)	$\frac{\sqrt{41990}C_1}{256} - \frac{\sqrt{4845}C_3}{128} + \frac{\sqrt{969}C_5}{128} - \frac{\sqrt{285}C_7}{256} + \frac{\sqrt{5}C_9}{256}$
115	B_{2u}	B2u	4	–	$\mathbb{G}_{10}^{(h,B_{2u},4)}$	Gh(10, B2u, 4,)	$\frac{9\sqrt{78}C_1}{256} + \frac{69C_3}{128} - \frac{\sqrt{5}C_5}{128} - \frac{43\sqrt{17}C_7}{256} + \frac{3\sqrt{969}C_9}{256}$
116	B_{2u}	B2u	5	–	$\mathbb{G}_{10}^{(h,B_{2u},5)}$	Gh(10, B2u, 5,)	$\frac{7\sqrt{3}C_1}{128} + \frac{7\sqrt{26}C_3}{128} + \frac{5\sqrt{130}C_5}{128} + \frac{7\sqrt{442}C_7}{256} + \frac{\sqrt{25194}C_9}{256}$
117	B_{3u}	B3u	1	–	$\mathbb{G}_{10}^{(h,B_{3u},1)}$	Gh(10, B3u, 1,)	$\frac{\sqrt{221}S_1}{32} - \frac{\sqrt{102}S_3}{32} - \frac{\sqrt{510}S_5}{32} - \frac{11\sqrt{6}S_7}{64} - \frac{\sqrt{38}S_9}{64}$
118	B_{3u}	B3u	2	–	$\mathbb{G}_{10}^{(h,B_{3u},2)}$	Gh(10, B3u, 2,)	$\frac{\sqrt{39}S_1}{32} - \frac{11\sqrt{2}S_3}{32} + \frac{5\sqrt{10}S_5}{32} - \frac{\sqrt{34}S_7}{64} - \frac{\sqrt{1938}S_9}{64}$
119	B_{3u}	B3u	3	–	$\mathbb{G}_{10}^{(h,B_{3u},3)}$	Gh(10, B3u, 3,)	$\frac{\sqrt{41990}S_1}{256} + \frac{\sqrt{4845}S_3}{128} + \frac{\sqrt{969}S_5}{128} + \frac{\sqrt{285}S_7}{256} + \frac{\sqrt{5}S_9}{256}$
120	B_{3u}	B3u	4	–	$\mathbb{G}_{10}^{(h,B_{3u},4)}$	Gh(10, B3u, 4,)	$\frac{9\sqrt{78}S_1}{256} - \frac{69S_3}{128} - \frac{\sqrt{5}S_5}{128} + \frac{43\sqrt{17}S_7}{256} + \frac{3\sqrt{969}S_9}{256}$
121	B_{3u}	B3u	5	–	$\mathbb{G}_{10}^{(h,B_{3u},5)}$	Gh(10, B3u, 5,)	$\frac{7\sqrt{3}S_1}{128} - \frac{7\sqrt{26}S_3}{128} + \frac{5\sqrt{130}S_5}{128} - \frac{7\sqrt{442}S_7}{256} + \frac{\sqrt{25194}S_9}{256}$

表 12　rank 11

No.	irrep.	(tag)	mul.	comp.	harmonics	(tag)	definition
122	A_g	Ag	1	–	$\mathbb{G}_{11}^{(h,A_g,1)}$	Gh(11, Ag, 1,)	$\frac{\sqrt{798}S_{10}}{48} + \frac{\sqrt{255}S_2}{24} + \frac{3\sqrt{6}S_6}{16}$
123	A_g	Ag	2	–	$\mathbb{G}_{11}^{(h,A_g,2)}$	Gh(11, Ag, 2,)	S_8
124	A_g	Ag	3	–	$\mathbb{G}_{11}^{(h,A_g,3)}$	Gh(11, Ag, 3,)	$-\frac{\sqrt{210}S_{10}}{96} + \frac{\sqrt{969}S_2}{48} - \frac{\sqrt{570}S_6}{32}$
125	A_g	Ag	4	–	$\mathbb{G}_{11}^{(h,A_g,4)}$	Gh(11, Ag, 4,)	S_4
126	A_g	Ag	5	–	$\mathbb{G}_{11}^{(h,A_g,5)}$	Gh(11, Ag, 5,)	$-\frac{\sqrt{646}S_{10}}{32} + \frac{\sqrt{35}S_2}{16} + \frac{\sqrt{238}S_6}{32}$
127	B_{1g}	B1g	1	–	$\mathbb{G}_{11}^{(h,B_{1g},1)}$	Gh(11, B1g, 1,)	C_0
128	B_{1g}	B1g	2	–	$\mathbb{G}_{11}^{(h,B_{1g},2)}$	Gh(11, B1g, 2,)	C_8
129	B_{1g}	B1g	3	–	$\mathbb{G}_{11}^{(h,B_{1g},3)}$	Gh(11, B1g, 3,)	C_4
130	B_{1g}	B1g	4	–	$\mathbb{G}_{11}^{(h,B_{1g},4)}$	Gh(11, B1g, 4,)	C_{10}
131	B_{1g}	B1g	5	–	$\mathbb{G}_{11}^{(h,B_{1g},5)}$	Gh(11, B1g, 5,)	C_6
132	B_{1g}	B1g	6	–	$\mathbb{G}_{11}^{(h,B_{1g},6)}$	Gh(11, B1g, 6,)	C_2
133	B_{2g}	B2g	1	–	$\mathbb{G}_{11}^{(h,B_{2g},1)}$	Gh(11, B2g, 1,)	$-\frac{21\sqrt{66}S_1}{512} - \frac{\sqrt{88179}S_{11}}{512} - \frac{\sqrt{30030}S_3}{512} - \frac{15\sqrt{143}S_5}{512} - \frac{\sqrt{36465}S_7}{512} - \frac{\sqrt{46189}S_9}{512}$
134	B_{2g}	B2g	2	–	$\mathbb{G}_{11}^{(h,B_{2g},2)}$	Gh(11, B2g, 2,)	$-\frac{\sqrt{41990}S_1}{512} - \frac{\sqrt{385}S_{11}}{512} + \frac{3\sqrt{4522}S_3}{512} + \frac{3\sqrt{4845}S_5}{512} - \frac{77\sqrt{19}S_7}{512} + \frac{39\sqrt{15}S_9}{512}$
135	B_{2g}	B2g	3	–	$\mathbb{G}_{11}^{(h,B_{2g},3)}$	Gh(11, B2g, 3,)	$-\frac{5\sqrt{546}S_1}{256} - \frac{\sqrt{10659}S_{11}}{256} - \frac{11\sqrt{30}S_3}{256} + \frac{13\sqrt{7}S_5}{256} + \frac{3\sqrt{1785}S_7}{256} + \frac{3\sqrt{2261}S_9}{256}$
136	B_{2g}	B2g	4	–	$\mathbb{G}_{11}^{(h,B_{2g},4)}$	Gh(11, B2g, 4,)	$\frac{\sqrt{29393}S_1}{512} - \frac{\sqrt{22}S_{11}}{1024} - \frac{9\sqrt{1615}S_3}{512} + \frac{5\sqrt{13566}S_5}{1024} - \frac{7\sqrt{1330}S_7}{1024} + \frac{9\sqrt{42}S_9}{1024}$
137	B_{2g}	B2g	5	–	$\mathbb{G}_{11}^{(h,B_{2g},5)}$	Gh(11, B2g, 5,)	$\frac{15\sqrt{221}S_1}{512} - \frac{3\sqrt{2926}S_{11}}{1024} - \frac{\sqrt{595}S_3}{512} - \frac{53\sqrt{102}S_5}{1024} - \frac{105\sqrt{10}S_7}{1024} + \frac{61\sqrt{114}S_9}{1024}$
138	B_{2g}	B2g	6	–	$\mathbb{G}_{11}^{(h,B_{2g},6)}$	Gh(11, B2g, 6,)	$\frac{21\sqrt{130}S_1}{512} - \frac{\sqrt{124355}S_{11}}{512} + \frac{57\sqrt{14}S_3}{512} + \frac{41\sqrt{15}S_5}{512} + \frac{17\sqrt{17}S_7}{512} - \frac{\sqrt{4845}S_9}{512}$
139	B_{3g}	B3g	1	–	$\mathbb{G}_{11}^{(h,B_{3g},1)}$	Gh(11, B3g, 1,)	$-\frac{21\sqrt{66}C_1}{512} + \frac{\sqrt{88179}C_{11}}{512} + \frac{\sqrt{30030}C_3}{512} - \frac{15\sqrt{143}C_5}{512} + \frac{\sqrt{36465}C_7}{512} - \frac{\sqrt{46189}C_9}{512}$
140	B_{3g}	B3g	2	–	$\mathbb{G}_{11}^{(h,B_{3g},2)}$	Gh(11, B3g, 2,)	$-\frac{\sqrt{41990}C_1}{512} + \frac{\sqrt{385}C_{11}}{512} - \frac{3\sqrt{4522}C_3}{512} + \frac{3\sqrt{4845}C_5}{512} + \frac{77\sqrt{19}C_7}{512} + \frac{39\sqrt{15}C_9}{512}$
141	B_{3g}	B3g	3	–	$\mathbb{G}_{11}^{(h,B_{3g},3)}$	Gh(11, B3g, 3,)	$-\frac{5\sqrt{546}C_1}{256} + \frac{\sqrt{10659}C_{11}}{256} + \frac{11\sqrt{30}C_3}{256} + \frac{13\sqrt{7}C_5}{256} - \frac{3\sqrt{1785}C_7}{256} + \frac{3\sqrt{2261}C_9}{256}$
142	B_{3g}	B3g	4	–	$\mathbb{G}_{11}^{(h,B_{3g},4)}$	Gh(11, B3g, 4,)	$-\frac{\sqrt{29393}C_1}{512} - \frac{\sqrt{22}C_{11}}{1024} - \frac{9\sqrt{1615}C_3}{512} - \frac{5\sqrt{13566}C_5}{1024} - \frac{7\sqrt{1330}C_7}{1024} - \frac{9\sqrt{42}C_9}{1024}$
143	B_{3g}	B3g	5	–	$\mathbb{G}_{11}^{(h,B_{3g},5)}$	Gh(11, B3g, 5,)	$-\frac{15\sqrt{221}C_1}{512} - \frac{3\sqrt{2926}C_{11}}{1024} - \frac{\sqrt{595}C_3}{512} + \frac{53\sqrt{102}C_5}{1024} - \frac{105\sqrt{10}C_7}{1024} - \frac{61\sqrt{114}C_9}{1024}$
144	B_{3g}	B3g	6	–	$\mathbb{G}_{11}^{(h,B_{3g},6)}$	Gh(11, B3g, 6,)	$-\frac{21\sqrt{130}C_1}{512} - \frac{\sqrt{124355}C_{11}}{512} + \frac{57\sqrt{14}C_3}{512} - \frac{41\sqrt{15}C_5}{512} + \frac{17\sqrt{17}C_7}{512} + \frac{\sqrt{4845}C_9}{512}$