

**Table 7.** The five major spontaneous radiative transition probabilities  $A^r$  and total transition probabilities  $\sum A^r$  for each level. Arrow marks the final level to which radiative transition happens from the level. The sum of all radiative probabilities from the corresponding level is given in the last column.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\sum A^r$ ( $s^{-1}$ )
2	1.59E+04	→ 1									1.59E+04
3	1.23E+03	→ 1	4.34E+02	→ 2							1.66E+03
4	3.13E+04	→ 1	5.88E+03	→ 2	7.31E-01	→ 3					3.71E+04
5	4.28E+04	→ 2	2.99E+04	→ 1	1.20E+04	→ 3	1.60E+03	→ 4			8.62E+04
6	1.22E+10	→ 1	5.21E+08	→ 2	2.24E+08	→ 3	2.28E+07	→ 5	1.15E+00	→ 4	1.30E+10
7	1.72E+10	→ 1	1.53E+08	→ 5	8.18E+07	→ 2	4.44E+07	→ 3	3.07E+06	→ 4	1.74E+10
8	1.92E+10	→ 1	2.70E+08	→ 2	2.04E+08	→ 4	6.51E+06	→ 5	4.55E+02	→ 7	1.97E+10
9	3.97E+10	→ 2	2.81E+09	→ 4	1.52E+09	→ 1	5.62E+08	→ 5	4.95E+07	→ 3	4.46E+10
10	3.04E+10	→ 3	5.61E+09	→ 5	1.40E+07	→ 1	1.39E+07	→ 2	3.07E+04	→ 6	3.60E+10
11	4.27E+10	→ 2	3.55E+10	→ 4	2.57E+09	→ 5	1.69E+09	→ 1	1.10E+05	→ 7	8.24E+10
12	9.74E+10	→ 3	1.47E+10	→ 2	9.36E+09	→ 5	8.64E+09	→ 4	4.16E+09	→ 1	1.34E+11
13	9.20E+10	→ 5	2.85E+10	→ 2	4.14E+09	→ 4	1.32E+08	→ 1	3.13E+04	→ 7	1.25E+11
14	4.06E+10	→ 10	2.82E+10	→ 12	1.59E+10	→ 9	8.48E+09	→ 11	2.79E+09	→ 6	9.94E+10
15	4.34E+10	→ 9	3.29E+10	→ 12	2.93E+10	→ 13	2.28E+09	→ 11	8.66E+08	→ 8	1.09E+11
16	1.30E+12	→ 1	2.10E+11	→ 2	1.66E+10	→ 4	2.76E+09	→ 5	1.14E+07	→ 6	1.52E+12
17	1.08E+12	→ 1	1.04E+11	→ 2	9.04E+10	→ 3	1.37E+10	→ 5	4.82E+09	→ 4	1.29E+12
18	2.52E+12	→ 2	7.50E+11	→ 4	5.73E+09	→ 5	6.04E+08	→ 1	6.15E+06	→ 12	3.27E+12
19	1.11E+12	→ 1	2.83E+11	→ 3	4.56E+08	→ 5	1.93E+08	→ 2	5.27E+06	→ 7	1.39E+12
20	1.86E+12	→ 3	6.50E+11	→ 4	3.69E+11	→ 2	2.98E+11	→ 5	1.60E+10	→ 1	3.19E+12
21	6.71E+09	→ 8	3.67E+09	→ 9	3.37E+09	→ 7	2.32E+09	→ 11	1.50E+09	→ 1	2.14E+10
22	2.02E+10	→ 6	5.16E+09	→ 8	2.61E+09	→ 7	2.52E+09	→ 16	1.29E+09	→ 1	3.33E+10
23	1.25E+12	→ 3	5.07E+11	→ 2	2.97E+11	→ 5	4.24E+10	→ 1	1.62E+07	→ 14	2.09E+12
24	1.91E+12	→ 5	4.30E+11	→ 2	1.62E+11	→ 3	9.66E+10	→ 4	8.07E+09	→ 1	2.60E+12
25	1.36E+10	→ 7	1.00E+09	→ 3	9.34E+08	→ 2	8.03E+08	→ 17	3.53E+08	→ 1	1.76E+10
26	3.50E+10	→ 6	2.03E+09	→ 11	1.78E+09	→ 10	1.59E+09	→ 13	1.17E+09	→ 17	4.52E+10
27	8.53E+09	→ 7	2.37E+09	→ 17	1.82E+09	→ 6	1.32E+09	→ 1	8.98E+08	→ 9	1.53E+10
28	2.96E+10	→ 7	7.43E+09	→ 9	7.03E+09	→ 8	1.89E+09	→ 12	1.33E+09	→ 17	5.10E+10
29	2.82E+10	→ 6	6.33E+09	→ 7	4.30E+09	→ 12	1.30E+09	→ 19	1.26E+09	→ 3	4.30E+10
30	5.05E+10	→ 6	2.81E+09	→ 7	2.34E+09	→ 12	2.30E+09	→ 10	1.24E+09	→ 18	6.47E+10
31	4.43E+09	→ 10	2.62E+09	→ 19	2.48E+09	→ 6	2.46E+08	→ 3	1.06E+05	→ 23	1.13E+10
32	1.69E+11	→ 6	1.29E+11	→ 7	8.66E+10	→ 8	8.28E+09	→ 10	2.55E+09	→ 19	4.00E+11
33	1.06E+12	→ 4	1.04E+12	→ 5	5.16E+10	→ 2	3.95E+08	→ 1	7.43E+07	→ 14	2.15E+12
34	2.97E+10	→ 12	2.39E+10	→ 7	1.11E+10	→ 8	8.53E+09	→ 10	7.14E+09	→ 9	9.28E+10
35	2.83E+10	→ 6	4.63E+09	→ 9	4.20E+09	→ 10	3.47E+09	→ 7	2.15E+09	→ 20	4.72E+10
36	2.47E+10	→ 11	1.49E+10	→ 13	1.12E+10	→ 12	2.39E+09	→ 9	2.32E+09	→ 7	6.38E+10
37	1.28E+10	→ 9	9.99E+09	→ 6	9.20E+09	→ 10	5.38E+09	→ 7	1.70E+09	→ 12	4.32E+10
38	1.92E+10	→ 6	2.12E+09	→ 7	1.13E+09	→ 9	8.09E+08	→ 10	1.80E+08	→ 24	2.41E+10
39	7.65E+11	→ 1	7.34E+11	→ 2	3.30E+10	→ 4	2.59E+10	→ 5	1.99E+10	→ 3	1.58E+12
40	2.50E+10	→ 10	2.92E+09	→ 23	2.18E+09	→ 6	6.84E+08	→ 2	3.94E+08	→ 5	3.25E+10
41	6.99E+10	→ 9	2.60E+10	→ 6	2.33E+10	→ 7	2.02E+10	→ 10	1.46E+10	→ 8	1.65E+11
42	2.71E+12	→ 1	5.89E+11	→ 2	1.06E+11	→ 3	2.95E+09	→ 22	1.02E+08	→ 5	3.41E+12
43	4.34E+10	→ 10	9.99E+09	→ 9	4.10E+09	→ 12	2.67E+09	→ 23	2.35E+09	→ 20	6.52E+10
44	9.76E+10	→ 9	4.27E+10	→ 11	1.17E+10	→ 12	6.90E+09	→ 7	3.62E+09	→ 20	1.72E+11
45	2.05E+12	→ 1	7.55E+11	→ 3	5.46E+11	→ 2	5.07E+11	→ 5	4.81E+11	→ 4	4.34E+12
46	3.08E+11	→ 3	2.74E+09	→ 27	5.56E+07	→ 29	2.00E+07	→ 7	1.09E+07	→ 31	3.11E+11
47	6.59E+11	→ 1	5.32E+11	→ 4	2.62E+11	→ 2	2.26E+11	→ 5	2.36E+09	→ 25	1.68E+12
48	3.07E+12	→ 1	2.05E+11	→ 2	3.63E+10	→ 3	1.52E+10	→ 5	2.38E+09	→ 26	3.33E+12
49	3.01E+11	→ 6	2.11E+11	→ 7	8.64E+10	→ 8	6.91E+10	→ 10	2.36E+10	→ 12	7.30E+11
50	4.12E+12	→ 2	6.58E+11	→ 1	5.01E+11	→ 4	2.69E+11	→ 5	1.69E+11	→ 3	5.72E+12
51	2.35E+09	→ 29	7.63E+08	→ 31	4.81E+08	→ 3	3.18E+07	→ 27	2.56E+07	→ 6	3.67E+09
52	2.71E+09	→ 31	9.36E+06	→ 3	7.34E+06	→ 6	6.62E+06	→ 10	9.90E+05	→ 1	2.73E+09

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
53	5.07E+12	→ 1	2.74E+12	→ 2	5.97E+11	→ 3	1.13E+11	→ 5	2.42E+09	→ 30	8.52E+12
54	1.18E+12	→ 6	4.91E+11	→ 7	3.14E+11	→ 8	1.27E+10	→ 11	7.74E+09	→ 13	2.01E+12
55	3.10E+10	→ 13	2.92E+10	→ 9	1.79E+10	→ 12	3.06E+09	→ 33	1.97E+09	→ 11	8.66E+10
56	1.34E+13	→ 1	2.16E+12	→ 3	3.13E+10	→ 5	1.63E+10	→ 2	1.99E+09	→ 29	1.56E+13
57	4.64E+10	→ 10	3.43E+10	→ 6	1.93E+10	→ 7	1.54E+10	→ 11	1.22E+10	→ 12	1.44E+11
58	2.05E+13	→ 1	8.65E+11	→ 3	1.86E+10	→ 4	1.37E+10	→ 5	8.75E+09	→ 2	2.14E+13
59	5.61E+12	→ 4	5.14E+12	→ 1	1.52E+12	→ 5	2.17E+09	→ 2	1.16E+09	→ 28	1.23E+13
60	1.82E+13	→ 1	2.15E+12	→ 4	3.11E+11	→ 5	5.06E+10	→ 2	1.63E+09	→ 32	2.07E+13
61	6.96E+12	→ 3	2.76E+09	→ 35	3.02E+08	→ 31	1.74E+08	→ 29	7.05E+07	→ 40	6.96E+12
62	9.67E+12	→ 4	1.21E+12	→ 5	1.07E+12	→ 3	2.56E+11	→ 1	9.84E+09	→ 2	1.22E+13
63	1.68E+13	→ 2	5.10E+12	→ 3	1.41E+12	→ 1	1.98E+11	→ 5	2.98E+09	→ 34	2.35E+13
64	3.87E+10	→ 4	1.13E+10	→ 2	1.07E+10	→ 1	7.89E+09	→ 5	2.20E+09	→ 3	7.34E+10
65	3.23E+11	→ 2	7.07E+10	→ 1	1.18E+10	→ 5	3.56E+09	→ 3	2.18E+09	→ 38	4.12E+11
66	3.70E+11	→ 3	2.32E+09	→ 38	9.09E+08	→ 37	3.93E+07	→ 31	3.01E+07	→ 6	3.74E+11
67	2.33E+12	→ 3	1.77E+09	→ 37	9.20E+08	→ 38	1.49E+08	→ 40	1.41E+08	→ 35	2.33E+12
68	3.04E+09	→ 40	3.47E+07	→ 10	1.52E+07	→ 31	6.05E+06	→ 6	6.41E+05	→ 3	3.10E+09
69	1.16E+13	→ 2	2.87E+12	→ 4	2.80E+12	→ 3	4.19E+11	→ 5	2.28E+11	→ 1	1.80E+13
70	1.06E+13	→ 3	9.69E+12	→ 2	1.10E+12	→ 5	1.28E+11	→ 1	1.05E+09	→ 41	2.16E+13
71	7.13E+12	→ 4	6.72E+12	→ 2	1.19E+11	→ 1	1.14E+10	→ 5	1.78E+09	→ 44	1.40E+13
72	2.65E+13	→ 3	2.56E+09	→ 43	8.84E+08	→ 40	2.60E+08	→ 37	6.49E+07	→ 29	2.65E+13
73	4.45E+12	→ 1	4.84E+10	→ 2	3.28E+10	→ 5	1.76E+09	→ 32	1.74E+09	→ 6	4.54E+12
74	4.47E+12	→ 1	6.12E+11	→ 2	5.76E+10	→ 5	2.33E+09	→ 3	1.80E+09	→ 32	5.15E+12
75	1.13E+12	→ 7	2.15E+11	→ 6	2.12E+11	→ 8	1.30E+10	→ 10	1.11E+10	→ 16	1.60E+12
76	4.27E+12	→ 1	6.21E+10	→ 4	4.61E+09	→ 5	2.50E+09	→ 6	2.41E+09	→ 32	4.35E+12
77	1.05E+12	→ 8	5.46E+11	→ 7	5.95E+10	→ 9	1.62E+10	→ 16	9.14E+09	→ 11	1.68E+12
78	1.10E+12	→ 6	4.97E+11	→ 7	1.80E+10	→ 9	1.37E+10	→ 17	3.18E+09	→ 10	1.63E+12
79	8.82E+12	→ 5	4.37E+12	→ 2	9.42E+11	→ 4	3.02E+11	→ 1	1.46E+09	→ 34	1.44E+13
80	1.60E+13	→ 5	3.01E+12	→ 2	3.20E+11	→ 3	1.72E+11	→ 1	1.56E+09	→ 37	1.95E+13
81	1.69E+12	→ 6	3.63E+10	→ 10	1.01E+10	→ 19	1.42E+09	→ 23	4.84E+07	→ 1	1.74E+12
82	1.49E+13	→ 5	1.62E+12	→ 3	1.57E+12	→ 4	3.28E+11	→ 2	1.19E+11	→ 1	1.86E+13
83	1.86E+12	→ 9	1.00E+11	→ 11	8.02E+10	→ 6	3.49E+10	→ 8	6.18E+09	→ 10	2.11E+12
84	1.77E+12	→ 10	2.36E+11	→ 7	1.37E+11	→ 6	1.11E+11	→ 12	6.38E+10	→ 9	2.33E+12
85	1.35E+13	→ 5	9.83E+11	→ 3	3.15E+10	→ 2	5.94E+09	→ 1	2.81E+09	→ 57	1.45E+13
86	1.37E+13	→ 4	4.19E+12	→ 5	1.70E+11	→ 2	9.24E+10	→ 3	3.22E+09	→ 55	1.82E+13
87	9.44E+11	→ 7	5.56E+11	→ 8	2.95E+10	→ 9	2.82E+10	→ 17	1.30E+10	→ 12	1.59E+12
88	1.05E+12	→ 8	3.69E+11	→ 6	6.19E+10	→ 9	5.83E+10	→ 10	2.70E+10	→ 11	1.60E+12
89	8.27E+10	→ 7	4.85E+09	→ 8	3.11E+09	→ 64	9.86E+07	→ 12	5.45E+07	→ 9	9.10E+10
90	6.82E+10	→ 6	2.30E+10	→ 7	6.13E+09	→ 8	2.21E+09	→ 64	8.27E+08	→ 65	1.01E+11
91	1.06E+11	→ 6	4.16E+09	→ 7	1.73E+09	→ 65	1.01E+09	→ 64	1.76E+08	→ 66	1.13E+11
92	2.40E+10	→ 6	1.89E+09	→ 65	7.91E+08	→ 66	3.23E+08	→ 10	6.29E+07	→ 1	2.72E+10
93	2.30E+09	→ 66	1.75E+08	→ 67	2.60E+07	→ 52	7.21E+06	→ 6	5.92E+06	→ 61	2.52E+09
94	9.79E+11	→ 7	2.88E+11	→ 6	1.91E+11	→ 10	9.03E+10	→ 12	2.06E+10	→ 19	1.59E+12
95	4.82E+11	→ 2	1.86E+11	→ 5	1.63E+11	→ 1	1.09E+11	→ 4	1.36E+10	→ 21	9.66E+11
96	7.50E+11	→ 3	4.52E+11	→ 2	2.38E+10	→ 5	1.49E+10	→ 1	1.34E+10	→ 4	1.28E+12
97	1.32E+12	→ 11	1.11E+12	→ 9	2.26E+10	→ 18	5.05E+09	→ 12	1.53E+09	→ 16	2.46E+12
98	1.65E+11	→ 2	1.99E+10	→ 1	5.78E+09	→ 26	3.50E+09	→ 3	3.41E+09	→ 22	2.05E+11
99	6.85E+11	→ 2	5.98E+11	→ 3	8.79E+10	→ 1	3.18E+10	→ 4	1.21E+10	→ 21	1.43E+12
100	1.43E+12	→ 10	6.85E+11	→ 11	2.21E+11	→ 12	1.93E+11	→ 9	1.54E+11	→ 13	2.73E+12
101	1.02E+11	→ 3	4.82E+09	→ 27	2.25E+09	→ 29	1.27E+09	→ 6	1.20E+09	→ 81	1.15E+11
102	1.80E+11	→ 2	1.11E+10	→ 3	4.65E+09	→ 27	2.93E+09	→ 22	2.34E+09	→ 75	2.09E+11
103	1.65E+12	→ 3	7.71E+11	→ 2	1.40E+11	→ 1	1.63E+10	→ 14	8.09E+09	→ 22	2.60E+12
104	5.18E+11	→ 3	3.90E+09	→ 29	3.19E+09	→ 27	2.30E+09	→ 78	8.75E+08	→ 31	5.31E+11
105	4.39E+12	→ 2	4.26E+11	→ 5	1.71E+11	→ 1	6.74E+10	→ 4	3.44E+10	→ 14	5.12E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
106	4.35E+12	→ 2	2.69E+11	→ 1	1.27E+11	→ 3	7.67E+10	→ 5	4.79E+09	→ 14	4.85E+12
107	5.69E+09	→ 31	3.30E+09	→ 81	1.74E+09	→ 6	4.88E+08	→ 40	4.35E+07	→ 10	1.13E+10
108	4.34E+12	→ 7	2.86E+12	→ 6	1.97E+10	→ 10	7.81E+09	→ 1	2.87E+09	→ 73	7.23E+12
109	3.74E+12	→ 3	4.54E+09	→ 35	3.31E+09	→ 43	2.18E+09	→ 31	1.41E+09	→ 10	3.75E+12
110	3.87E+12	→ 7	2.96E+12	→ 8	5.22E+11	→ 6	1.21E+10	→ 10	7.80E+09	→ 1	7.38E+12
111	8.49E+12	→ 6	1.54E+10	→ 10	8.13E+09	→ 1	4.19E+09	→ 74	3.09E+08	→ 65	8.52E+12
112	6.61E+12	→ 8	1.33E+12	→ 7	9.48E+09	→ 9	8.00E+09	→ 1	3.42E+09	→ 12	7.97E+12
113	5.03E+11	→ 2	3.12E+11	→ 3	1.52E+11	→ 1	4.72E+10	→ 4	2.26E+10	→ 5	1.07E+12
114	6.75E+10	→ 4	3.69E+10	→ 2	1.42E+10	→ 1	1.04E+10	→ 22	3.61E+09	→ 77	1.47E+11
115	5.02E+11	→ 3	3.38E+11	→ 1	1.84E+11	→ 2	2.01E+10	→ 5	4.32E+09	→ 81	1.07E+12
116	3.43E+12	→ 2	2.34E+12	→ 3	4.00E+11	→ 1	1.81E+10	→ 15	4.56E+09	→ 36	6.21E+12
117	3.53E+11	→ 7	2.58E+11	→ 8	2.19E+11	→ 6	1.24E+11	→ 11	1.05E+11	→ 12	1.26E+12
118	4.62E+12	→ 3	1.86E+11	→ 2	9.56E+10	→ 5	3.64E+10	→ 14	1.87E+10	→ 1	4.97E+12
119	7.59E+11	→ 4	2.53E+11	→ 5	2.40E+11	→ 2	1.22E+11	→ 1	1.33E+10	→ 25	1.40E+12
120	3.33E+12	→ 12	3.00E+11	→ 13	2.65E+11	→ 9	2.26E+11	→ 11	8.04E+10	→ 20	4.24E+12
121	4.24E+11	→ 2	2.65E+11	→ 4	8.26E+10	→ 5	3.47E+10	→ 3	1.43E+10	→ 26	8.43E+11
122	1.38E+12	→ 10	7.48E+11	→ 12	3.21E+11	→ 9	5.32E+10	→ 23	1.97E+10	→ 7	2.53E+12
123	1.03E+12	→ 9	8.75E+11	→ 13	2.39E+11	→ 12	4.06E+10	→ 24	1.15E+10	→ 11	2.23E+12
124	6.35E+11	→ 3	1.64E+11	→ 2	4.46E+10	→ 5	3.59E+10	→ 1	1.07E+10	→ 27	9.06E+11
125	2.05E+11	→ 3	1.76E+11	→ 4	8.80E+10	→ 2	8.75E+10	→ 5	1.28E+10	→ 29	5.96E+11
126	7.61E+11	→ 3	1.77E+10	→ 31	2.62E+09	→ 94	2.43E+09	→ 35	9.91E+08	→ 7	7.87E+11
127	1.51E+12	→ 4	9.09E+11	→ 5	5.05E+11	→ 2	3.88E+11	→ 1	1.41E+10	→ 30	3.35E+12
128	1.08E+12	→ 4	8.57E+11	→ 1	5.36E+11	→ 2	3.51E+10	→ 5	1.62E+10	→ 26	2.57E+12
129	1.59E+12	→ 4	2.44E+11	→ 2	2.37E+11	→ 1	2.22E+11	→ 3	7.77E+09	→ 27	2.33E+12
130	9.86E+11	→ 5	9.32E+11	→ 3	1.63E+10	→ 29	4.69E+09	→ 31	2.76E+09	→ 32	1.95E+12
131	2.77E+12	→ 4	2.98E+11	→ 1	2.33E+11	→ 3	2.06E+10	→ 15	6.29E+09	→ 27	3.36E+12
132	2.71E+11	→ 7	1.96E+11	→ 8	4.00E+10	→ 6	9.31E+09	→ 39	4.95E+09	→ 9	5.31E+11
133	4.27E+12	→ 5	4.67E+10	→ 3	2.96E+10	→ 4	2.75E+10	→ 2	1.80E+10	→ 14	4.45E+12
134	2.66E+12	→ 5	1.94E+11	→ 1	1.48E+11	→ 2	1.17E+11	→ 3	1.59E+10	→ 35	3.16E+12
135	4.91E+11	→ 7	3.99E+11	→ 6	9.23E+09	→ 10	4.54E+09	→ 42	2.78E+09	→ 9	9.16E+11
136	1.07E+12	→ 6	1.54E+10	→ 10	3.65E+09	→ 46	2.58E+09	→ 48	1.52E+09	→ 98	1.10E+12
137	1.32E+11	→ 9	1.29E+11	→ 6	1.18E+11	→ 7	3.12E+10	→ 10	5.37E+09	→ 39	4.21E+11
138	3.85E+09	→ 46	2.06E+09	→ 101	1.05E+09	→ 52	7.95E+08	→ 51	3.54E+08	→ 61	8.87E+09
139	1.03E+12	→ 6	8.32E+10	→ 10	4.11E+09	→ 42	2.32E+09	→ 102	2.25E+09	→ 46	1.12E+12
140	2.58E+09	→ 52	2.02E+09	→ 104	1.62E+09	→ 51	1.43E+09	→ 46	5.80E+08	→ 61	9.34E+09
141	2.53E+12	→ 4	2.25E+12	→ 5	5.34E+11	→ 2	1.19E+11	→ 14	1.05E+11	→ 1	5.61E+12
142	3.65E+12	→ 8	3.36E+11	→ 9	1.50E+11	→ 11	9.59E+10	→ 7	8.07E+10	→ 12	4.33E+12
143	3.89E+09	→ 52	2.63E+09	→ 107	2.40E+08	→ 68	1.02E+06	→ 6	5.61E+04	→ 81	6.75E+09
144	3.97E+12	→ 8	1.83E+12	→ 7	6.52E+11	→ 6	6.10E+11	→ 11	2.44E+11	→ 10	7.53E+12
145	7.14E+11	→ 12	5.85E+11	→ 8	5.68E+11	→ 11	4.94E+11	→ 10	6.30E+10	→ 23	2.51E+12
146	2.21E+12	→ 13	5.18E+11	→ 12	3.83E+11	→ 9	7.59E+10	→ 24	7.18E+10	→ 8	3.28E+12
147	1.31E+13	→ 7	9.67E+11	→ 6	4.71E+10	→ 10	4.12E+09	→ 42	3.19E+09	→ 53	1.41E+13
148	6.05E+11	→ 7	3.54E+11	→ 12	1.47E+11	→ 8	1.03E+11	→ 9	1.00E+11	→ 11	1.35E+12
149	8.09E+12	→ 6	9.61E+09	→ 10	3.74E+09	→ 2	1.78E+09	→ 51	1.74E+09	→ 56	8.12E+12
150	9.30E+12	→ 6	1.97E+11	→ 10	6.03E+09	→ 2	2.24E+09	→ 56	1.92E+09	→ 106	9.51E+12
151	8.69E+09	→ 3	3.04E+09	→ 109	1.41E+09	→ 51	1.07E+09	→ 61	1.04E+09	→ 52	1.68E+10
152	7.78E+11	→ 1	2.36E+11	→ 3	9.98E+10	→ 4	7.17E+10	→ 2	4.50E+10	→ 29	1.30E+12
153	4.80E+11	→ 1	4.44E+11	→ 4	2.84E+11	→ 2	1.61E+11	→ 5	3.74E+10	→ 26	1.48E+12
154	2.19E+13	→ 6	4.37E+10	→ 10	3.29E+10	→ 7	5.12E+09	→ 58	2.97E+09	→ 56	2.20E+13
155	4.49E+12	→ 7	4.13E+12	→ 8	7.12E+11	→ 10	2.14E+11	→ 9	1.43E+11	→ 12	9.80E+12
156	7.31E+12	→ 7	7.55E+11	→ 8	5.79E+11	→ 9	4.33E+11	→ 12	2.17E+11	→ 11	9.37E+12
157	1.09E+13	→ 6	2.38E+12	→ 7	1.28E+12	→ 9	1.11E+12	→ 10	8.18E+11	→ 11	1.76E+13
158	4.88E+12	→ 9	1.02E+12	→ 10	3.21E+11	→ 12	1.92E+11	→ 7	3.06E+10	→ 6	6.47E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
159	1.55E+12	→ 1	1.98E+11	→ 2	6.42E+10	→ 3	5.70E+10	→ 31	2.02E+10	→ 27	1.92E+12
160	1.30E+13	→ 6	2.44E+12	→ 10	2.21E+12	→ 9	1.45E+12	→ 7	1.19E+12	→ 11	2.10E+13
161	5.64E+12	→ 9	2.52E+12	→ 7	1.20E+12	→ 12	9.72E+11	→ 13	2.94E+11	→ 8	1.07E+13
162	6.11E+11	→ 3	5.45E+11	→ 1	2.18E+11	→ 4	1.43E+11	→ 2	3.21E+10	→ 35	1.63E+12
163	1.60E+12	→ 5	4.91E+11	→ 1	3.38E+10	→ 2	3.36E+10	→ 30	2.77E+10	→ 36	2.26E+12
164	1.70E+12	→ 5	5.02E+11	→ 2	5.41E+10	→ 1	2.72E+10	→ 37	1.69E+10	→ 3	2.34E+12
165	1.28E+12	→ 3	4.76E+10	→ 40	5.71E+09	→ 31	4.18E+09	→ 37	2.74E+09	→ 122	1.35E+12
166	6.22E+12	→ 9	2.33E+12	→ 7	2.27E+12	→ 10	5.36E+11	→ 12	3.58E+11	→ 11	1.23E+13
167	7.11E+12	→ 10	1.68E+12	→ 6	8.38E+09	→ 3	2.89E+09	→ 63	2.14E+09	→ 118	8.81E+12
168	7.60E+12	→ 10	4.91E+12	→ 9	9.37E+11	→ 7	5.57E+11	→ 12	2.22E+11	→ 6	1.42E+13
169	9.60E+11	→ 9	4.40E+11	→ 8	4.30E+11	→ 10	5.16E+10	→ 12	2.57E+10	→ 11	1.96E+12
170	2.32E+12	→ 7	1.97E+11	→ 9	1.78E+11	→ 6	3.10E+10	→ 12	6.60E+09	→ 48	2.75E+12
171	1.81E+12	→ 6	1.55E+11	→ 10	6.35E+09	→ 46	3.20E+09	→ 53	2.46E+09	→ 124	1.99E+12
172	8.40E+11	→ 5	1.03E+11	→ 4	6.87E+10	→ 2	2.60E+10	→ 41	2.19E+10	→ 3	1.11E+12
173	2.59E+11	→ 3	1.09E+11	→ 2	7.25E+10	→ 5	2.43E+10	→ 43	1.07E+10	→ 40	5.08E+11
174	1.18E+10	→ 52	2.57E+09	→ 126	2.55E+09	→ 3	1.80E+09	→ 61	5.56E+08	→ 51	2.01E+10
175	8.01E+11	→ 7	2.70E+11	→ 9	9.27E+10	→ 10	1.54E+10	→ 46	5.05E+09	→ 51	1.20E+12
176	8.28E+12	→ 8	7.16E+12	→ 7	4.80E+11	→ 12	2.09E+11	→ 9	4.26E+10	→ 11	1.62E+13
177	1.20E+13	→ 8	6.14E+11	→ 7	4.86E+11	→ 11	4.69E+11	→ 10	1.28E+11	→ 12	1.39E+13
178	8.73E+12	→ 8	7.17E+12	→ 7	6.69E+11	→ 12	4.16E+11	→ 9	3.47E+11	→ 13	1.74E+13
179	5.46E+12	→ 7	5.79E+11	→ 12	2.10E+11	→ 13	1.40E+11	→ 8	7.76E+10	→ 9	6.66E+12
180	8.90E+11	→ 4	6.31E+11	→ 3	2.53E+11	→ 2	1.67E+11	→ 5	1.37E+11	→ 14	2.23E+12
181	4.54E+12	→ 6	8.61E+11	→ 10	9.65E+09	→ 51	6.68E+09	→ 52	3.04E+09	→ 3	5.43E+12
182	7.94E+12	→ 7	1.58E+12	→ 6	1.40E+12	→ 9	2.90E+11	→ 12	1.28E+11	→ 10	1.14E+13
183	6.09E+12	→ 7	1.95E+12	→ 8	1.37E+12	→ 9	7.68E+11	→ 10	2.43E+11	→ 12	1.06E+13
184	8.12E+11	→ 5	5.98E+11	→ 2	2.14E+11	→ 4	7.73E+10	→ 15	4.88E+10	→ 44	1.79E+12
185	3.10E+12	→ 9	1.83E+11	→ 7	7.20E+10	→ 10	3.55E+10	→ 12	1.45E+10	→ 6	3.43E+12
186	1.07E+13	→ 10	3.52E+10	→ 6	1.39E+10	→ 61	6.97E+09	→ 5	5.75E+09	→ 51	1.08E+13
187	6.44E+12	→ 10	4.62E+12	→ 9	2.37E+11	→ 7	1.30E+11	→ 12	8.61E+09	→ 61	1.15E+13
188	1.13E+12	→ 5	2.37E+11	→ 2	9.96E+10	→ 3	6.79E+10	→ 40	2.08E+10	→ 1	1.61E+12
189	1.16E+13	→ 11	2.11E+12	→ 13	1.70E+12	→ 8	3.62E+11	→ 12	3.07E+11	→ 7	1.61E+13
190	1.38E+12	→ 5	2.68E+11	→ 4	1.34E+11	→ 2	2.07E+10	→ 43	1.93E+10	→ 49	1.91E+12
191	7.99E+11	→ 5	2.23E+11	→ 4	5.74E+10	→ 41	2.20E+10	→ 55	2.00E+10	→ 15	1.17E+12
192	3.89E+11	→ 5	3.33E+11	→ 3	1.09E+11	→ 4	5.03E+10	→ 14	4.63E+10	→ 43	1.05E+12
193	1.24E+13	→ 11	2.10E+12	→ 9	1.29E+12	→ 12	7.68E+11	→ 7	5.00E+11	→ 13	1.79E+13
194	2.62E+12	→ 7	1.16E+12	→ 9	5.01E+11	→ 6	5.52E+10	→ 12	4.02E+10	→ 51	4.46E+12
195	1.85E+12	→ 8	1.49E+12	→ 7	1.10E+12	→ 11	8.96E+11	→ 9	1.27E+11	→ 13	5.65E+12
196	2.23E+12	→ 10	1.12E+12	→ 6	5.44E+10	→ 52	1.72E+10	→ 46	6.93E+09	→ 61	3.45E+12
197	5.12E+11	→ 4	3.40E+11	→ 5	8.79E+10	→ 15	5.98E+10	→ 2	4.19E+10	→ 14	1.15E+12
198	4.89E+12	→ 8	3.51E+12	→ 11	6.62E+11	→ 7	2.48E+11	→ 12	2.63E+10	→ 13	9.43E+12
199	3.62E+12	→ 11	1.22E+12	→ 12	9.53E+11	→ 9	8.29E+11	→ 10	4.89E+11	→ 8	7.57E+12
200	3.75E+12	→ 10	3.52E+12	→ 9	6.60E+11	→ 12	5.61E+10	→ 6	3.30E+10	→ 7	8.10E+12
201	3.86E+10	→ 68	4.72E+09	→ 3	4.63E+09	→ 52	3.65E+09	→ 67	2.81E+09	→ 165	5.57E+10
202	2.67E+10	→ 6	2.43E+10	→ 67	6.04E+09	→ 72	4.74E+09	→ 10	4.65E+09	→ 5	8.85E+10
203	1.83E+13	→ 10	4.12E+10	→ 6	2.14E+10	→ 72	5.25E+09	→ 68	3.93E+09	→ 70	1.84E+13
204	1.37E+13	→ 9	5.54E+12	→ 10	8.77E+10	→ 12	1.76E+10	→ 7	1.49E+10	→ 70	1.94E+13
205	1.38E+13	→ 12	2.38E+12	→ 10	2.21E+12	→ 9	5.69E+11	→ 13	1.90E+11	→ 11	1.92E+13
206	1.33E+13	→ 12	4.04E+12	→ 9	1.44E+12	→ 13	1.38E+11	→ 11	3.90E+10	→ 69	1.90E+13
207	9.81E+10	→ 14	5.14E+10	→ 1	3.29E+10	→ 81	1.63E+10	→ 78	1.09E+10	→ 117	2.50E+11
208	7.32E+12	→ 9	5.64E+12	→ 13	1.21E+12	→ 11	1.81E+11	→ 12	1.35E+11	→ 10	1.46E+13
209	1.67E+13	→ 12	2.45E+12	→ 10	9.58E+11	→ 9	2.94E+10	→ 7	2.61E+10	→ 61	2.02E+13
210	1.70E+13	→ 13	1.89E+12	→ 12	7.12E+11	→ 11	2.39E+11	→ 9	3.32E+10	→ 82	1.99E+13
211	1.50E+12	→ 14	5.22E+10	→ 3	3.34E+10	→ 1	3.25E+10	→ 84	3.01E+10	→ 2	1.73E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
212	2.13E+12	→ 10	7.01E+10	→ 68	5.85E+10	→ 6	1.07E+10	→ 85	7.26E+09	→ 67	2.29E+12
213	1.25E+12	→ 9	1.08E+12	→ 10	2.21E+11	→ 12	5.78E+10	→ 7	2.77E+10	→ 67	2.69E+12
214	6.88E+10	→ 14	3.27E+10	→ 1	3.12E+10	→ 15	2.45E+10	→ 77	2.23E+10	→ 117	2.27E+11
215	8.66E+12	→ 11	2.71E+12	→ 12	6.59E+11	→ 10	5.83E+11	→ 13	2.68E+11	→ 9	1.31E+13
216	1.37E+13	→ 11	8.25E+11	→ 12	6.69E+11	→ 9	5.45E+11	→ 13	9.73E+10	→ 8	1.59E+13
217	1.86E+13	→ 12	6.12E+11	→ 9	2.80E+11	→ 10	6.42E+10	→ 7	6.23E+10	→ 72	1.97E+13
218	1.29E+12	→ 14	5.33E+10	→ 15	4.05E+10	→ 2	3.25E+10	→ 3	2.99E+10	→ 5	1.55E+12
219	2.61E+13	→ 13	2.48E+12	→ 12	5.23E+11	→ 11	1.17E+11	→ 9	2.62E+10	→ 10	2.93E+13
220	1.60E+12	→ 15	1.50E+12	→ 14	8.41E+10	→ 5	7.11E+10	→ 4	4.71E+10	→ 83	3.40E+12
221	1.38E+12	→ 14	4.12E+10	→ 122	3.46E+10	→ 3	2.92E+10	→ 5	6.51E+09	→ 145	1.50E+12
222	1.95E+12	→ 6	2.39E+11	→ 7	1.43E+11	→ 8	1.18E+11	→ 10	1.14E+11	→ 12	2.73E+12
223	1.59E+12	→ 15	4.79E+10	→ 14	3.59E+10	→ 123	2.35E+10	→ 3	1.91E+10	→ 4	1.77E+12
224	2.49E+12	→ 6	2.77E+10	→ 101	2.37E+10	→ 9	8.92E+09	→ 7	8.67E+09	→ 98	2.61E+12
225	1.45E+12	→ 7	8.73E+11	→ 12	8.26E+11	→ 9	1.06E+11	→ 8	2.44E+10	→ 116	3.35E+12
226	2.35E+12	→ 6	5.10E+10	→ 10	3.22E+10	→ 107	1.36E+10	→ 104	6.04E+09	→ 159	2.47E+12
227	9.43E+11	→ 7	7.69E+11	→ 12	4.98E+11	→ 9	6.00E+10	→ 6	3.97E+10	→ 10	2.39E+12
228	1.17E+12	→ 7	1.06E+12	→ 12	9.79E+11	→ 9	1.91E+10	→ 96	1.67E+10	→ 11	3.33E+12
229	1.08E+12	→ 7	6.12E+11	→ 8	3.06E+11	→ 12	1.63E+11	→ 6	5.22E+10	→ 9	2.38E+12
230	2.08E+12	→ 8	4.35E+11	→ 12	1.26E+11	→ 13	1.12E+11	→ 11	6.19E+10	→ 9	2.91E+12
231	1.45E+12	→ 12	6.76E+11	→ 10	3.24E+11	→ 8	2.25E+11	→ 6	1.61E+11	→ 7	3.07E+12
232	1.55E+12	→ 7	7.94E+11	→ 12	2.88E+11	→ 9	6.10E+10	→ 10	2.36E+10	→ 6	2.80E+12
233	1.41E+12	→ 8	4.33E+11	→ 7	3.63E+11	→ 10	2.32E+11	→ 13	1.66E+11	→ 11	2.85E+12
234	1.95E+12	→ 13	1.31E+12	→ 12	1.03E+12	→ 11	2.26E+11	→ 8	1.41E+11	→ 9	4.73E+12
235	1.17E+12	→ 13	7.96E+11	→ 11	4.95E+11	→ 7	1.62E+11	→ 10	7.93E+10	→ 6	2.92E+12
236	1.01E+12	→ 9	7.49E+11	→ 10	5.53E+11	→ 12	3.04E+10	→ 164	6.47E+09	→ 6	2.38E+12
237	2.25E+12	→ 10	6.06E+10	→ 6	3.41E+10	→ 165	6.01E+09	→ 107	4.58E+09	→ 188	2.37E+12
238	1.31E+12	→ 15	7.62E+11	→ 14	6.33E+10	→ 145	4.06E+10	→ 5	2.77E+10	→ 146	2.23E+12
239	2.38E+12	→ 9	4.07E+11	→ 12	1.66E+10	→ 10	1.63E+10	→ 172	1.40E+10	→ 13	2.89E+12
240	1.92E+12	→ 10	4.76E+11	→ 9	9.55E+10	→ 12	2.04E+10	→ 173	9.92E+09	→ 6	2.57E+12
241	1.88E+10	→ 138	1.06E+10	→ 140	7.78E+09	→ 6	5.76E+09	→ 149	4.65E+09	→ 147	7.43E+10
242	2.29E+10	→ 136	1.59E+10	→ 3	1.10E+10	→ 1	7.61E+09	→ 6	7.56E+09	→ 2	1.09E+11
243	4.22E+10	→ 15	2.30E+10	→ 2	2.16E+10	→ 135	2.11E+10	→ 1	8.99E+09	→ 3	1.72E+11
244	2.45E+10	→ 132	2.33E+10	→ 2	2.25E+10	→ 1	1.80E+10	→ 15	5.48E+09	→ 178	1.37E+11
245	3.14E+10	→ 143	9.01E+09	→ 140	8.00E+09	→ 6	4.00E+09	→ 174	3.57E+09	→ 138	6.95E+10
246	9.64E+10	→ 3	2.63E+10	→ 151	5.58E+09	→ 139	5.21E+09	→ 167	2.98E+09	→ 227	1.62E+11
247	2.16E+12	→ 10	1.65E+12	→ 12	3.55E+11	→ 11	2.69E+11	→ 13	1.81E+11	→ 9	4.70E+12
248	2.65E+12	→ 14	1.25E+11	→ 1	9.53E+09	→ 142	8.68E+09	→ 179	7.26E+09	→ 166	2.85E+12
249	3.56E+12	→ 14	4.53E+11	→ 15	1.17E+11	→ 1	1.98E+10	→ 2	1.42E+10	→ 168	4.24E+12
250	3.79E+12	→ 14	4.62E+10	→ 2	4.47E+10	→ 1	2.29E+10	→ 3	1.22E+10	→ 150	3.99E+12
251	1.37E+12	→ 12	1.34E+12	→ 9	6.19E+11	→ 11	2.22E+11	→ 13	1.62E+10	→ 180	3.65E+12
252	1.44E+11	→ 14	6.79E+10	→ 15	2.11E+10	→ 2	1.85E+10	→ 183	1.43E+10	→ 132	3.14E+11
253	2.15E+11	→ 14	7.27E+10	→ 15	3.40E+10	→ 137	1.18E+10	→ 4	7.87E+09	→ 170	3.84E+11
254	4.87E+11	→ 14	6.03E+10	→ 1	1.23E+10	→ 139	1.03E+10	→ 171	8.83E+09	→ 2	6.46E+11
255	2.79E+10	→ 3	1.35E+10	→ 174	1.13E+10	→ 138	8.76E+09	→ 140	8.43E+09	→ 139	1.06E+11
256	9.38E+11	→ 14	7.31E+11	→ 15	5.25E+10	→ 2	1.71E+10	→ 3	1.31E+10	→ 1	1.83E+12
257	3.45E+11	→ 14	7.79E+10	→ 2	4.03E+10	→ 1	2.37E+10	→ 3	1.08E+10	→ 149	5.65E+11
258	8.64E+11	→ 15	7.16E+10	→ 14	3.01E+10	→ 2	1.63E+10	→ 200	1.34E+10	→ 4	1.07E+12
259	5.62E+12	→ 14	5.00E+10	→ 3	2.73E+10	→ 5	1.12E+10	→ 186	7.56E+09	→ 2	5.78E+12
260	1.81E+10	→ 202	6.13E+09	→ 151	5.32E+09	→ 3	4.42E+09	→ 9	3.98E+09	→ 203	5.69E+10
261	2.57E+10	→ 201	7.82E+09	→ 10	6.49E+09	→ 143	2.55E+09	→ 237	1.54E+09	→ 212	5.06E+10
262	1.69E+12	→ 11	9.46E+11	→ 13	9.37E+10	→ 12	5.03E+10	→ 188	2.24E+10	→ 190	2.84E+12
263	2.94E+12	→ 13	7.13E+11	→ 11	2.74E+11	→ 12	9.53E+10	→ 9	4.07E+10	→ 192	4.12E+12
264	6.81E+11	→ 14	7.12E+10	→ 2	1.66E+10	→ 5	1.33E+10	→ 202	9.11E+09	→ 3	8.32E+11

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
265	1.72E+13	→ 14	3.05E+12	→ 15	5.11E+10	→ 5	2.72E+10	→ 205	1.33E+10	→ 206	2.03E+13
266	1.45E+11	→ 3	1.24E+10	→ 201	8.35E+09	→ 203	6.19E+09	→ 10	4.27E+09	→ 212	2.00E+11
267	2.71E+13	→ 14	7.49E+10	→ 5	1.51E+10	→ 3	1.45E+10	→ 203	6.85E+09	→ 217	2.73E+13
268	2.60E+13	→ 14	2.55E+12	→ 15	5.19E+10	→ 5	2.29E+10	→ 4	1.76E+10	→ 3	2.87E+13
269	2.01E+13	→ 15	2.80E+12	→ 14	8.47E+10	→ 4	2.80E+10	→ 5	1.46E+10	→ 204	2.31E+13
270	2.55E+13	→ 15	5.69E+12	→ 14	5.91E+10	→ 4	3.22E+10	→ 5	2.12E+10	→ 208	3.13E+13
271	3.65E+11	→ 1	2.92E+11	→ 22	1.68E+11	→ 21	1.54E+11	→ 2	3.72E+10	→ 26	1.09E+12
272	2.62E+12	→ 14	7.21E+10	→ 5	4.42E+10	→ 212	1.76E+10	→ 213	5.32E+09	→ 2	2.79E+12
273	1.46E+13	→ 15	2.31E+11	→ 14	3.35E+10	→ 217	1.49E+10	→ 4	1.44E+10	→ 5	1.50E+13
274	3.25E+11	→ 1	2.33E+11	→ 27	8.73E+10	→ 26	6.97E+10	→ 3	5.21E+10	→ 30	9.95E+11
275	4.82E+11	→ 16	1.10E+11	→ 39	1.24E+10	→ 8	1.22E+10	→ 18	6.07E+09	→ 20	6.43E+11
276	7.29E+11	→ 2	2.31E+11	→ 4	1.62E+11	→ 30	7.07E+10	→ 34	6.56E+10	→ 28	1.52E+12
277	4.59E+11	→ 16	9.05E+10	→ 42	1.47E+10	→ 8	9.77E+09	→ 39	7.41E+09	→ 17	6.15E+11
278	3.97E+11	→ 1	2.37E+11	→ 31	1.19E+11	→ 29	1.02E+11	→ 32	9.88E+10	→ 3	1.06E+12
279	5.92E+11	→ 3	1.93E+11	→ 4	1.49E+11	→ 35	1.20E+11	→ 5	1.07E+11	→ 2	1.57E+12
280	3.36E+11	→ 17	1.18E+11	→ 18	6.76E+10	→ 45	4.32E+10	→ 47	3.89E+10	→ 20	6.48E+11
281	3.47E+11	→ 17	1.20E+11	→ 18	5.82E+10	→ 48	2.48E+10	→ 19	2.29E+10	→ 45	6.35E+11
282	4.77E+11	→ 17	8.32E+10	→ 46	1.53E+10	→ 7	9.87E+09	→ 48	7.35E+09	→ 53	6.14E+11
283	2.77E+11	→ 18	1.43E+11	→ 17	8.53E+10	→ 50	3.66E+10	→ 20	1.54E+10	→ 47	6.26E+11
284	9.17E+11	→ 21	4.11E+11	→ 1	2.77E+11	→ 2	1.60E+11	→ 22	1.32E+11	→ 4	1.98E+12
285	3.24E+11	→ 18	1.01E+11	→ 17	7.54E+10	→ 53	3.70E+10	→ 20	1.36E+10	→ 62	6.20E+11
286	2.12E+12	→ 1	1.02E+12	→ 22	8.40E+11	→ 2	6.88E+10	→ 26	2.09E+10	→ 34	4.11E+12
287	3.69E+11	→ 19	1.24E+11	→ 20	5.77E+10	→ 51	3.25E+10	→ 56	1.35E+10	→ 6	6.50E+11
288	4.84E+11	→ 19	7.70E+10	→ 52	2.05E+10	→ 51	9.10E+09	→ 6	6.43E+09	→ 10	6.12E+11
289	4.37E+11	→ 19	4.39E+10	→ 58	2.66E+10	→ 60	2.45E+10	→ 56	1.67E+10	→ 17	5.88E+11
290	4.22E+11	→ 20	6.52E+10	→ 63	2.41E+10	→ 18	2.37E+10	→ 62	1.77E+10	→ 12	6.18E+11
291	3.50E+11	→ 20	1.08E+11	→ 19	6.59E+10	→ 61	2.27E+10	→ 12	1.33E+10	→ 56	6.29E+11
292	3.47E+11	→ 20	5.56E+10	→ 62	5.50E+10	→ 18	3.53E+10	→ 59	2.77E+10	→ 24	5.72E+11
293	2.14E+12	→ 39	1.26E+11	→ 42	5.06E+10	→ 45	4.95E+10	→ 62	1.59E+10	→ 63	2.43E+12
294	4.69E+11	→ 3	4.03E+11	→ 2	2.16E+11	→ 40	1.44E+11	→ 43	9.87E+10	→ 5	1.61E+12
295	1.93E+12	→ 42	1.96E+11	→ 48	1.47E+11	→ 63	6.33E+10	→ 56	1.32E+10	→ 70	2.38E+12
296	7.21E+11	→ 1	3.92E+11	→ 25	3.29E+11	→ 4	2.83E+11	→ 2	1.58E+11	→ 26	2.43E+12
297	7.22E+11	→ 5	4.49E+11	→ 1	1.69E+11	→ 25	1.45E+11	→ 26	1.20E+11	→ 37	2.02E+12
298	1.04E+12	→ 27	4.09E+11	→ 3	9.07E+10	→ 29	7.73E+09	→ 78	7.10E+09	→ 43	1.57E+12
299	5.83E+11	→ 25	4.81E+11	→ 1	3.39E+11	→ 28	2.49E+11	→ 4	1.07E+11	→ 26	2.00E+12
300	2.66E+12	→ 1	6.51E+11	→ 26	3.12E+11	→ 27	1.19E+11	→ 3	5.77E+10	→ 2	4.02E+12
301	1.44E+12	→ 2	1.04E+12	→ 4	6.24E+11	→ 28	5.99E+11	→ 1	1.34E+11	→ 30	4.24E+12
302	3.77E+12	→ 2	8.50E+11	→ 30	6.81E+11	→ 1	1.79E+11	→ 3	1.32E+11	→ 5	5.89E+12
303	7.22E+11	→ 29	3.54E+11	→ 31	6.23E+10	→ 27	4.83E+09	→ 40	2.90E+09	→ 35	1.16E+12
304	1.15E+12	→ 31	7.23E+09	→ 81	2.09E+09	→ 40	7.80E+08	→ 181	7.59E+08	→ 196	1.16E+12
305	3.06E+12	→ 1	5.20E+11	→ 29	4.86E+11	→ 3	3.08E+11	→ 2	2.29E+11	→ 32	5.04E+12
306	5.91E+12	→ 1	5.67E+11	→ 32	3.87E+11	→ 3	2.43E+11	→ 29	8.81E+10	→ 26	7.44E+12
307	6.66E+12	→ 1	7.77E+11	→ 32	3.86E+11	→ 4	1.15E+11	→ 26	5.28E+10	→ 36	8.20E+12
308	3.70E+12	→ 4	8.26E+11	→ 1	4.30E+11	→ 36	3.72E+11	→ 5	1.97E+11	→ 28	6.15E+12
309	1.77E+12	→ 45	2.00E+11	→ 48	9.72E+10	→ 58	7.58E+10	→ 42	6.28E+10	→ 39	2.46E+12
310	1.12E+12	→ 53	6.17E+11	→ 48	3.14E+11	→ 46	1.44E+11	→ 56	1.22E+11	→ 42	2.42E+12
311	3.56E+12	→ 2	2.09E+12	→ 3	7.41E+11	→ 5	5.40E+11	→ 34	2.29E+11	→ 35	7.49E+12
312	3.83E+12	→ 4	8.94E+11	→ 5	3.84E+11	→ 3	3.38E+11	→ 36	2.26E+11	→ 34	6.40E+12
313	6.64E+12	→ 3	8.67E+11	→ 35	1.29E+11	→ 43	5.32E+10	→ 31	2.77E+10	→ 29	7.75E+12
314	2.19E+12	→ 46	6.50E+10	→ 72	6.38E+10	→ 61	5.64E+10	→ 51	1.29E+10	→ 67	2.40E+12
315	7.02E+11	→ 53	6.03E+11	→ 48	5.78E+11	→ 63	2.86E+11	→ 42	8.41E+10	→ 70	2.35E+12
316	1.62E+12	→ 47	4.09E+11	→ 45	1.31E+11	→ 50	8.28E+10	→ 58	7.50E+10	→ 60	2.46E+12
317	1.47E+12	→ 50	4.50E+11	→ 62	2.22E+11	→ 53	7.67E+10	→ 58	2.94E+10	→ 56	2.40E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
318	4.47E+11	→ 24	6.58E+10	→ 67	3.84E+10	→ 23	2.41E+10	→ 80	1.75E+10	→ 9	6.43E+11
319	3.36E+11	→ 23	1.29E+11	→ 24	3.46E+10	→ 69	3.29E+10	→ 70	1.67E+10	→ 79	6.31E+11
320	4.84E+11	→ 23	7.71E+10	→ 68	1.74E+10	→ 10	1.36E+10	→ 72	7.04E+09	→ 6	6.29E+11
321	4.28E+11	→ 23	5.13E+10	→ 72	4.65E+10	→ 24	3.00E+10	→ 70	1.01E+10	→ 69	6.16E+11
322	4.22E+11	→ 24	4.16E+10	→ 71	3.94E+10	→ 9	3.76E+10	→ 82	3.30E+10	→ 69	6.27E+11
323	1.50E+12	→ 51	3.64E+11	→ 61	1.94E+11	→ 52	1.45E+11	→ 46	1.04E+11	→ 72	2.38E+12
324	2.38E+12	→ 52	1.43E+10	→ 68	8.40E+09	→ 107	6.51E+08	→ 31	2.06E+08	→ 304	2.41E+12
325	1.41E+12	→ 60	4.94E+11	→ 58	4.12E+11	→ 59	5.25E+10	→ 47	3.42E+10	→ 45	2.46E+12
326	8.05E+11	→ 56	7.04E+11	→ 51	4.96E+11	→ 48	2.60E+11	→ 63	3.71E+10	→ 52	2.43E+12
327	1.21E+12	→ 58	3.83E+11	→ 60	3.49E+11	→ 59	2.47E+11	→ 56	1.10E+11	→ 45	2.46E+12
328	9.30E+11	→ 58	8.41E+11	→ 56	2.57E+11	→ 48	1.31E+11	→ 50	1.26E+11	→ 51	2.45E+12
329	1.23E+12	→ 61	4.55E+11	→ 51	2.75E+11	→ 72	2.61E+11	→ 52	5.55E+10	→ 46	2.35E+12
330	9.27E+11	→ 59	4.02E+11	→ 60	3.68E+11	→ 62	2.35E+11	→ 50	1.63E+11	→ 71	2.30E+12
331	9.41E+11	→ 63	5.40E+11	→ 56	3.11E+11	→ 61	1.75E+11	→ 53	1.30E+11	→ 48	2.37E+12
332	5.40E+11	→ 5	3.32E+11	→ 57	2.08E+11	→ 4	1.54E+11	→ 55	3.52E+10	→ 2	1.35E+12
333	1.18E+12	→ 62	3.50E+11	→ 50	2.80E+11	→ 63	1.05E+11	→ 56	9.90E+10	→ 48	2.40E+12
334	2.94E+11	→ 24	9.33E+10	→ 23	6.91E+10	→ 59	5.55E+10	→ 80	4.84E+10	→ 60	7.02E+11
335	8.55E+11	→ 37	8.07E+11	→ 3	1.65E+11	→ 40	9.36E+10	→ 38	2.79E+10	→ 43	1.97E+12
336	1.14E+12	→ 40	3.73E+09	→ 81	2.37E+09	→ 31	9.34E+08	→ 212	9.06E+08	→ 203	1.15E+12
337	3.76E+12	→ 3	2.04E+12	→ 2	4.79E+11	→ 43	3.00E+11	→ 41	1.29E+11	→ 35	7.08E+12
338	3.70E+12	→ 2	1.14E+12	→ 3	5.69E+11	→ 41	3.45E+11	→ 4	1.65E+11	→ 43	6.56E+12
339	5.07E+12	→ 3	6.56E+11	→ 43	2.33E+11	→ 40	1.25E+11	→ 37	8.23E+10	→ 35	6.20E+12
340	2.32E+12	→ 2	1.31E+12	→ 4	5.86E+11	→ 44	3.39E+11	→ 41	1.10E+11	→ 36	4.83E+12
341	6.90E+12	→ 5	1.11E+12	→ 2	4.62E+11	→ 49	2.95E+11	→ 37	1.11E+11	→ 41	9.18E+12
342	2.90E+12	→ 5	1.47E+12	→ 2	2.96E+11	→ 41	2.74E+11	→ 49	2.33E+11	→ 4	5.91E+12
343	5.75E+12	→ 5	5.47E+11	→ 3	4.12E+11	→ 49	3.44E+11	→ 4	1.89E+11	→ 44	7.89E+12
344	4.78E+11	→ 33	1.11E+11	→ 86	5.32E+10	→ 11	1.95E+10	→ 13	1.25E+10	→ 79	6.89E+11
345	4.58E+11	→ 33	9.47E+10	→ 85	4.80E+10	→ 11	2.46E+10	→ 13	1.16E+10	→ 86	6.67E+11
346	2.35E+11	→ 66	1.74E+11	→ 65	1.20E+11	→ 64	1.91E+10	→ 67	1.19E+10	→ 74	5.77E+11
347	1.06E+12	→ 70	5.05E+11	→ 72	3.76E+11	→ 80	1.52E+11	→ 53	1.39E+11	→ 61	2.40E+12
348	1.06E+12	→ 67	4.45E+11	→ 72	4.19E+11	→ 61	4.11E+11	→ 68	7.49E+10	→ 66	2.44E+12
349	1.39E+12	→ 69	6.41E+11	→ 70	1.17E+11	→ 80	7.36E+10	→ 53	6.63E+10	→ 72	2.46E+12
350	1.28E+12	→ 80	4.15E+11	→ 67	3.47E+11	→ 70	7.93E+10	→ 61	7.63E+10	→ 63	2.42E+12
351	1.13E+12	→ 72	9.59E+11	→ 67	1.01E+11	→ 61	8.08E+10	→ 66	5.29E+10	→ 68	2.34E+12
352	2.33E+12	→ 68	1.89E+10	→ 52	4.80E+09	→ 107	6.45E+08	→ 40	1.80E+08	→ 336	2.35E+12
353	1.02E+12	→ 69	9.13E+11	→ 71	1.86E+11	→ 70	8.79E+10	→ 59	7.71E+10	→ 82	2.49E+12
354	1.37E+12	→ 82	4.23E+11	→ 80	3.95E+11	→ 70	4.56E+10	→ 67	4.14E+10	→ 63	2.43E+12
355	1.38E+12	→ 79	4.18E+11	→ 71	2.86E+11	→ 69	2.50E+11	→ 82	3.64E+10	→ 60	2.46E+12
356	9.12E+11	→ 79	8.93E+11	→ 82	3.54E+11	→ 71	8.72E+10	→ 70	5.73E+10	→ 59	2.46E+12
357	5.84E+11	→ 6	3.23E+11	→ 7	2.35E+11	→ 74	1.74E+11	→ 8	1.66E+11	→ 73	1.65E+12
358	4.36E+11	→ 38	5.14E+10	→ 1	4.74E+10	→ 37	4.70E+10	→ 90	3.35E+10	→ 89	6.66E+11
359	2.98E+12	→ 5	9.77E+11	→ 57	9.06E+10	→ 2	9.01E+10	→ 54	3.41E+10	→ 49	4.25E+12
360	4.16E+11	→ 38	1.36E+11	→ 1	5.68E+10	→ 92	4.54E+10	→ 37	3.92E+10	→ 91	7.52E+11
361	4.20E+12	→ 4	8.84E+11	→ 55	6.80E+11	→ 5	1.71E+11	→ 57	2.69E+10	→ 36	6.01E+12
362	4.30E+11	→ 38	8.13E+10	→ 93	4.61E+10	→ 37	2.30E+10	→ 92	3.93E+09	→ 91	5.88E+11
363	2.37E+12	→ 1	2.82E+11	→ 54	9.34E+10	→ 111	9.06E+10	→ 49	6.66E+10	→ 2	3.06E+12
364	2.39E+12	→ 1	2.92E+11	→ 54	9.30E+10	→ 49	7.44E+10	→ 108	5.83E+10	→ 2	3.06E+12
365	2.41E+12	→ 1	2.91E+11	→ 54	9.55E+10	→ 49	6.95E+10	→ 2	6.05E+10	→ 112	3.09E+12
366	2.00E+12	→ 86	1.50E+11	→ 85	9.52E+10	→ 62	4.44E+10	→ 69	4.12E+10	→ 82	2.37E+12
367	2.14E+12	→ 85	1.59E+11	→ 80	3.98E+10	→ 70	2.91E+10	→ 63	3.68E+09	→ 188	2.38E+12
368	1.13E+12	→ 64	3.06E+10	→ 7	2.51E+10	→ 73	3.27E+09	→ 58	2.97E+09	→ 62	1.20E+12
369	7.96E+11	→ 64	3.27E+11	→ 65	3.12E+10	→ 6	1.78E+10	→ 74	1.10E+10	→ 73	1.21E+12
370	6.72E+11	→ 65	3.60E+11	→ 64	8.53E+10	→ 66	3.68E+10	→ 6	2.72E+10	→ 74	1.20E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
371	7.26E+11	→ 65	3.82E+11	→ 66	3.08E+10	→ 67	1.55E+10	→ 74	8.07E+09	→ 6	1.17E+12
372	1.08E+12	→ 66	8.67E+10	→ 67	2.39E+09	→ 61	1.15E+09	→ 51	6.51E+08	→ 46	1.17E+12
373	3.41E+12	→ 7	1.87E+12	→ 6	7.24E+11	→ 73	3.01E+11	→ 74	1.65E+10	→ 113	6.39E+12
374	2.71E+12	→ 7	2.14E+12	→ 8	5.48E+11	→ 73	4.32E+11	→ 76	3.17E+11	→ 6	6.28E+12
375	6.00E+12	→ 6	9.85E+11	→ 74	4.34E+10	→ 115	3.01E+10	→ 65	1.56E+10	→ 10	7.12E+12
376	4.41E+12	→ 8	8.68E+11	→ 7	8.57E+11	→ 76	1.70E+11	→ 73	2.53E+10	→ 114	6.38E+12
377	1.15E+12	→ 90	1.11E+12	→ 91	1.36E+11	→ 92	8.90E+09	→ 110	3.12E+09	→ 88	2.41E+12
378	1.54E+12	→ 91	8.06E+11	→ 92	4.37E+10	→ 93	1.30E+10	→ 108	1.43E+09	→ 147	2.41E+12
379	1.37E+12	→ 90	7.49E+11	→ 89	2.88E+11	→ 91	4.40E+09	→ 112	3.34E+09	→ 88	2.41E+12
380	1.87E+12	→ 89	5.34E+11	→ 90	1.52E+09	→ 87	1.24E+09	→ 88	9.80E+08	→ 110	2.41E+12
381	1.96E+12	→ 92	4.35E+11	→ 93	1.43E+10	→ 111	6.96E+08	→ 149	5.67E+08	→ 150	2.41E+12
382	2.41E+12	→ 93	5.96E+08	→ 66	2.90E+08	→ 140	1.66E+08	→ 372	4.69E+07	→ 67	2.41E+12
383	2.07E+12	→ 111	5.85E+10	→ 149	5.24E+10	→ 150	1.09E+10	→ 93	1.08E+10	→ 136	2.23E+12
384	1.79E+12	→ 108	3.01E+11	→ 111	5.09E+10	→ 147	2.77E+10	→ 154	1.28E+10	→ 182	2.24E+12
385	1.57E+12	→ 110	5.16E+11	→ 108	3.55E+10	→ 144	2.03E+10	→ 111	1.50E+10	→ 147	2.25E+12
386	1.49E+12	→ 112	5.95E+11	→ 110	4.25E+10	→ 108	2.89E+10	→ 142	2.18E+10	→ 178	2.24E+12
387	1.96E+11	→ 102	1.87E+11	→ 7	6.30E+10	→ 96	6.27E+10	→ 113	4.40E+10	→ 95	8.46E+11
388	1.82E+11	→ 99	1.42E+11	→ 103	1.37E+11	→ 8	1.04E+11	→ 114	9.87E+10	→ 7	8.68E+11
389	2.14E+11	→ 6	1.55E+11	→ 104	1.21E+11	→ 98	7.77E+10	→ 101	5.94E+10	→ 96	8.69E+11
390	7.09E+11	→ 9	2.19E+11	→ 106	1.12E+11	→ 116	6.02E+10	→ 105	5.12E+10	→ 11	1.36E+12
391	2.49E+11	→ 6	2.28E+11	→ 107	1.16E+11	→ 115	1.08E+11	→ 101	4.67E+10	→ 104	8.35E+11
392	6.54E+11	→ 10	1.96E+11	→ 109	1.76E+11	→ 118	7.41E+10	→ 12	4.93E+10	→ 116	1.38E+12
393	2.62E+11	→ 75	2.28E+11	→ 2	1.81E+11	→ 77	6.06E+10	→ 1	5.50E+10	→ 132	1.03E+12
394	2.31E+11	→ 78	2.26E+11	→ 75	2.25E+11	→ 3	1.06E+11	→ 2	3.93E+10	→ 135	9.88E+11
395	2.84E+11	→ 78	1.78E+11	→ 75	1.61E+11	→ 2	3.16E+10	→ 136	3.10E+10	→ 3	8.32E+11
396	3.51E+11	→ 77	2.90E+11	→ 2	1.25E+11	→ 3	8.20E+10	→ 137	6.91E+10	→ 4	1.15E+12
397	2.59E+11	→ 75	1.65E+11	→ 78	1.54E+11	→ 2	5.14E+10	→ 139	2.63E+10	→ 83	7.77E+11
398	4.57E+11	→ 78	1.70E+11	→ 3	5.06E+10	→ 138	2.55E+10	→ 140	1.80E+10	→ 136	7.83E+11
399	2.42E+12	→ 2	4.19E+11	→ 83	1.44E+11	→ 1	4.76E+10	→ 150	4.19E+10	→ 75	3.27E+12
400	5.03E+11	→ 3	4.06E+11	→ 2	1.35E+11	→ 75	1.31E+11	→ 77	8.69E+10	→ 1	1.62E+12
401	2.54E+12	→ 2	3.66E+11	→ 83	1.22E+11	→ 1	6.16E+10	→ 77	5.84E+10	→ 5	3.37E+12
402	5.40E+11	→ 3	3.91E+11	→ 81	9.07E+10	→ 84	2.48E+10	→ 149	2.27E+10	→ 140	1.18E+12
403	2.04E+11	→ 77	1.85E+11	→ 75	1.54E+11	→ 2	5.90E+10	→ 155	4.64E+10	→ 4	7.72E+11
404	4.88E+11	→ 81	7.34E+10	→ 143	1.36E+10	→ 140	9.93E+09	→ 138	6.26E+09	→ 288	6.08E+11
405	1.39E+12	→ 2	1.82E+11	→ 83	1.52E+11	→ 3	1.47E+11	→ 78	5.39E+10	→ 75	2.15E+12
406	1.85E+12	→ 3	3.71E+11	→ 84	7.80E+10	→ 81	5.71E+10	→ 151	2.52E+10	→ 78	2.48E+12
407	3.74E+11	→ 81	2.32E+11	→ 3	3.54E+10	→ 154	3.28E+10	→ 84	2.71E+10	→ 78	8.32E+11
408	1.78E+12	→ 3	8.69E+11	→ 2	2.79E+11	→ 84	1.19E+11	→ 83	7.49E+10	→ 1	3.32E+12
409	3.70E+11	→ 7	1.59E+11	→ 8	1.42E+11	→ 129	1.23E+11	→ 121	1.06E+11	→ 119	1.19E+12
410	3.89E+11	→ 8	1.75E+11	→ 6	1.67E+11	→ 124	1.04E+11	→ 130	7.94E+10	→ 128	1.26E+12
411	2.44E+12	→ 3	3.67E+11	→ 84	4.93E+10	→ 167	2.97E+10	→ 168	2.54E+10	→ 81	3.03E+12
412	5.86E+11	→ 11	5.47E+11	→ 9	2.06E+11	→ 131	8.42E+10	→ 129	6.52E+10	→ 127	1.79E+12
413	7.64E+11	→ 7	3.36E+11	→ 6	2.22E+11	→ 126	1.04E+11	→ 130	6.46E+10	→ 129	1.77E+12
414	5.04E+11	→ 95	3.11E+11	→ 96	2.01E+11	→ 99	1.75E+11	→ 7	1.13E+11	→ 8	1.52E+12
415	4.79E+11	→ 96	4.72E+11	→ 98	3.59E+11	→ 7	3.48E+11	→ 6	6.23E+10	→ 103	1.91E+12
416	6.96E+11	→ 98	6.51E+11	→ 6	2.16E+11	→ 101	1.34E+11	→ 104	6.88E+10	→ 106	1.84E+12
417	8.15E+11	→ 99	2.72E+11	→ 103	9.90E+10	→ 6	9.53E+10	→ 7	6.01E+10	→ 9	1.44E+12
418	8.71E+11	→ 10	2.13E+11	→ 12	1.83E+11	→ 134	1.76E+11	→ 8	1.21E+11	→ 133	2.20E+12
419	1.30E+12	→ 6	9.99E+11	→ 102	1.01E+11	→ 10	5.88E+10	→ 115	4.77E+10	→ 101	2.57E+12
420	6.69E+11	→ 104	4.53E+11	→ 101	1.75E+10	→ 109	8.74E+09	→ 107	6.12E+09	→ 298	1.16E+12
421	8.77E+11	→ 8	4.43E+11	→ 96	3.19E+11	→ 95	2.74E+11	→ 114	6.97E+10	→ 11	2.24E+12
422	9.77E+11	→ 8	4.76E+11	→ 7	2.91E+11	→ 96	2.81E+11	→ 6	2.79E+11	→ 11	3.13E+12
423	3.50E+12	→ 7	6.06E+11	→ 6	4.12E+11	→ 113	2.85E+11	→ 102	1.25E+11	→ 98	5.34E+12



Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
424	1.13E+12	→ 7	2.47E+11	→ 96	2.34E+11	→ 95	2.31E+11	→ 12	2.01E+11	→ 113	2.76E+12
425	1.02E+12	→ 106	6.43E+10	→ 6	5.12E+10	→ 98	2.57E+10	→ 101	1.63E+10	→ 10	1.22E+12
426	4.43E+11	→ 107	3.33E+11	→ 104	3.23E+11	→ 101	6.25E+10	→ 109	3.51E+09	→ 303	1.17E+12
427	2.45E+12	→ 7	1.98E+12	→ 8	4.97E+11	→ 114	2.34E+11	→ 113	1.71E+11	→ 6	5.93E+12
428	1.15E+12	→ 107	4.26E+09	→ 304	3.03E+09	→ 52	1.65E+09	→ 68	8.74E+08	→ 245	1.16E+12
429	3.60E+12	→ 6	3.25E+11	→ 104	3.11E+11	→ 115	3.02E+11	→ 101	9.96E+10	→ 107	4.76E+12
430	1.01E+12	→ 9	8.72E+11	→ 7	6.16E+11	→ 11	5.34E+11	→ 105	2.65E+11	→ 8	4.19E+12
431	5.41E+12	→ 9	3.10E+11	→ 116	2.37E+11	→ 106	2.26E+11	→ 103	1.83E+11	→ 10	7.04E+12
432	3.31E+12	→ 9	7.84E+11	→ 11	4.45E+11	→ 7	3.16E+11	→ 12	2.79E+11	→ 105	6.45E+12
433	1.01E+12	→ 109	1.05E+11	→ 101	9.74E+09	→ 104	3.30E+09	→ 313	2.23E+09	→ 3	1.14E+12
434	5.87E+12	→ 6	5.81E+11	→ 115	1.90E+11	→ 101	1.49E+11	→ 104	1.04E+11	→ 9	7.12E+12
435	5.13E+11	→ 4	3.46E+11	→ 87	1.36E+11	→ 5	7.88E+10	→ 169	6.67E+10	→ 97	1.35E+12
436	7.35E+12	→ 6	7.52E+11	→ 115	4.33E+11	→ 9	8.68E+10	→ 98	5.63E+10	→ 102	9.02E+12
437	1.39E+12	→ 12	1.17E+12	→ 7	9.06E+11	→ 9	5.14E+11	→ 116	2.34E+11	→ 103	4.72E+12
438	2.81E+11	→ 87	1.70E+11	→ 88	8.48E+10	→ 170	6.51E+10	→ 5	4.65E+10	→ 4	8.37E+11
439	1.73E+12	→ 132	2.74E+11	→ 135	1.81E+11	→ 137	8.10E+10	→ 144	3.36E+10	→ 166	2.44E+12
440	1.51E+12	→ 135	2.55E+11	→ 136	1.94E+11	→ 139	1.89E+11	→ 147	6.08E+10	→ 108	2.41E+12
441	3.73E+11	→ 4	2.20E+11	→ 88	1.46E+11	→ 87	1.05E+11	→ 5	8.81E+10	→ 2	1.29E+12
442	1.19E+12	→ 136	3.72E+11	→ 149	2.44E+11	→ 138	1.59E+11	→ 140	1.05E+11	→ 167	2.39E+12
443	4.08E+11	→ 88	9.09E+10	→ 2	7.85E+10	→ 171	4.28E+10	→ 94	4.23E+10	→ 1	8.46E+11
444	1.04E+12	→ 147	4.15E+11	→ 137	2.36E+11	→ 158	1.50E+11	→ 136	1.40E+11	→ 150	2.38E+12
445	1.07E+12	→ 144	3.91E+11	→ 135	1.81E+11	→ 157	1.37E+11	→ 158	1.16E+11	→ 154	2.44E+12
446	1.36E+12	→ 137	3.44E+11	→ 147	1.15E+11	→ 139	9.65E+10	→ 136	7.80E+10	→ 149	2.35E+12
447	2.13E+12	→ 10	1.72E+12	→ 9	8.53E+11	→ 12	6.83E+11	→ 7	4.86E+11	→ 116	6.75E+12
448	3.17E+11	→ 5	3.12E+11	→ 88	2.05E+11	→ 1	8.59E+10	→ 87	5.20E+10	→ 177	1.19E+12
449	2.10E+12	→ 139	1.69E+11	→ 136	1.94E+10	→ 138	8.67E+09	→ 150	6.53E+09	→ 111	2.33E+12
450	1.05E+12	→ 158	4.36E+11	→ 137	2.83E+11	→ 168	1.44E+11	→ 149	1.16E+11	→ 150	2.30E+12
451	1.42E+12	→ 138	6.70E+11	→ 140	2.11E+11	→ 151	6.29E+09	→ 143	5.63E+09	→ 314	2.31E+12
452	1.15E+12	→ 142	5.54E+11	→ 132	3.65E+11	→ 144	1.18E+11	→ 135	4.59E+10	→ 157	2.44E+12
453	5.20E+12	→ 10	6.34E+11	→ 118	3.45E+11	→ 109	1.98E+11	→ 6	2.95E+10	→ 115	6.50E+12
454	1.45E+12	→ 150	6.67E+11	→ 149	9.99E+10	→ 167	1.08E+10	→ 136	9.09E+09	→ 140	2.27E+12
455	5.13E+12	→ 10	8.70E+11	→ 9	5.59E+11	→ 12	5.24E+11	→ 118	2.49E+11	→ 7	7.92E+12
456	1.59E+12	→ 4	2.74E+11	→ 97	1.85E+11	→ 5	1.47E+11	→ 2	7.48E+10	→ 88	2.62E+12
457	5.91E+11	→ 160	3.71E+11	→ 166	2.79E+11	→ 158	2.51E+11	→ 157	1.92E+11	→ 147	2.34E+12
458	1.82E+12	→ 4	2.99E+11	→ 97	6.42E+10	→ 94	6.20E+10	→ 161	6.15E+10	→ 185	2.69E+12
459	9.46E+11	→ 148	3.80E+11	→ 155	3.09E+11	→ 144	1.29E+11	→ 161	1.24E+11	→ 142	2.43E+12
460	1.55E+12	→ 155	2.71E+11	→ 147	9.28E+10	→ 144	7.75E+10	→ 166	3.88E+10	→ 158	2.38E+12
461	6.62E+11	→ 142	6.39E+11	→ 148	4.06E+11	→ 156	2.71E+11	→ 144	7.71E+10	→ 132	2.42E+12
462	6.80E+11	→ 156	4.75E+11	→ 161	3.23E+11	→ 160	1.53E+11	→ 166	1.13E+11	→ 157	2.37E+12
463	4.62E+11	→ 94	3.52E+11	→ 3	7.79E+10	→ 174	2.41E+10	→ 181	1.88E+10	→ 288	9.93E+11
464	3.37E+11	→ 94	2.92E+11	→ 3	2.73E+11	→ 4	5.04E+10	→ 97	2.97E+10	→ 1	1.26E+12
465	5.29E+11	→ 5	4.12E+11	→ 3	3.12E+11	→ 94	9.94E+10	→ 100	4.75E+10	→ 181	1.64E+12
466	7.07E+11	→ 151	6.62E+11	→ 138	5.78E+11	→ 140	3.94E+11	→ 143	3.38E+09	→ 323	2.35E+12
467	2.32E+12	→ 143	4.07E+09	→ 324	6.62E+08	→ 352	6.28E+08	→ 107	1.28E+08	→ 428	2.32E+12
468	6.19E+11	→ 149	4.31E+11	→ 140	4.01E+11	→ 138	3.46E+11	→ 136	2.27E+11	→ 150	2.41E+12
469	1.30E+12	→ 151	8.05E+11	→ 140	1.21E+11	→ 143	7.35E+10	→ 174	1.72E+10	→ 138	2.33E+12
470	6.75E+11	→ 154	5.43E+11	→ 149	3.71E+11	→ 136	1.85E+11	→ 150	1.02E+11	→ 147	2.42E+12
471	1.78E+12	→ 5	3.58E+11	→ 100	1.11E+11	→ 157	4.91E+10	→ 187	4.39E+10	→ 2	2.71E+12
472	1.04E+12	→ 154	3.30E+11	→ 157	1.94E+11	→ 149	1.47E+11	→ 135	1.42E+11	→ 136	2.44E+12
473	1.36E+12	→ 5	2.83E+11	→ 100	1.17E+11	→ 168	9.39E+10	→ 166	7.85E+10	→ 2	2.41E+12
474	7.42E+11	→ 157	6.68E+11	→ 154	3.72E+11	→ 160	1.64E+11	→ 5	8.77E+10	→ 135	2.45E+12
475	1.29E+12	→ 167	3.39E+11	→ 151	1.67E+11	→ 150	1.09E+11	→ 140	6.72E+10	→ 186	2.28E+12
476	1.18E+12	→ 157	8.55E+11	→ 160	6.91E+10	→ 155	5.83E+10	→ 144	4.29E+10	→ 156	2.44E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
477	9.34E+11	→ 168	5.24E+11	→ 167	2.24E+11	→ 158	1.67E+11	→ 150	7.26E+10	→ 187	2.30E+12
478	7.29E+11	→ 161	6.94E+11	→ 156	2.74E+11	→ 160	2.38E+11	→ 148	2.24E+11	→ 166	2.45E+12
479	6.41E+11	→ 168	4.08E+11	→ 166	2.22E+11	→ 160	1.55E+11	→ 5	1.25E+11	→ 158	2.32E+12
480	5.79E+11	→ 166	4.13E+11	→ 160	3.68E+11	→ 161	2.02E+11	→ 168	1.74E+11	→ 156	2.40E+12
481	1.43E+12	→ 5	7.39E+11	→ 4	2.88E+11	→ 100	1.79E+11	→ 2	8.84E+10	→ 97	3.02E+12
482	7.70E+11	→ 119	5.05E+11	→ 8	1.68E+11	→ 7	1.41E+11	→ 121	7.18E+10	→ 127	1.92E+12
483	1.18E+12	→ 7	7.16E+11	→ 121	2.18E+11	→ 129	1.33E+11	→ 125	3.94E+10	→ 124	2.43E+12
484	9.09E+11	→ 124	5.45E+11	→ 6	2.02E+11	→ 130	1.27E+11	→ 10	1.89E+10	→ 126	1.85E+12
485	1.82E+11	→ 1	1.28E+11	→ 22	1.08E+11	→ 277	7.67E+10	→ 21	5.82E+10	→ 2	6.82E+11
486	5.25E+11	→ 125	4.11E+11	→ 9	2.22E+11	→ 7	1.90E+11	→ 124	1.43E+11	→ 121	2.06E+12
487	1.67E+12	→ 8	1.68E+11	→ 159	1.19E+11	→ 125	8.47E+10	→ 10	8.26E+10	→ 152	2.79E+12
488	2.14E+12	→ 8	2.11E+11	→ 11	1.98E+11	→ 125	1.89E+11	→ 128	1.40E+11	→ 127	3.50E+12
489	5.11E+12	→ 8	5.88E+11	→ 128	2.25E+11	→ 13	1.77E+11	→ 119	1.16E+11	→ 125	6.64E+12
490	1.09E+12	→ 12	2.53E+11	→ 7	2.11E+11	→ 8	1.67E+11	→ 180	9.33E+10	→ 11	2.50E+12
491	1.15E+12	→ 126	1.44E+10	→ 304	3.55E+09	→ 104	3.20E+09	→ 109	2.03E+09	→ 101	1.18E+12
492	6.46E+11	→ 11	4.69E+11	→ 127	2.70E+11	→ 13	2.06E+11	→ 128	1.47E+11	→ 133	2.46E+12
493	2.42E+12	→ 9	4.79E+11	→ 131	4.30E+11	→ 129	1.73E+11	→ 7	1.29E+11	→ 6	3.98E+12
494	4.58E+12	→ 7	3.76E+11	→ 129	2.85E+11	→ 12	2.70E+11	→ 131	2.46E+11	→ 125	6.18E+12
495	3.68E+12	→ 7	4.27E+11	→ 12	3.20E+11	→ 129	2.29E+11	→ 6	1.85E+11	→ 131	5.76E+12
496	1.21E+12	→ 6	5.77E+11	→ 130	4.27E+11	→ 10	3.75E+11	→ 126	8.87E+10	→ 134	2.80E+12
497	1.79E+12	→ 7	5.81E+11	→ 6	3.04E+11	→ 131	2.88E+11	→ 130	1.61E+11	→ 124	3.88E+12
498	8.34E+11	→ 10	1.96E+11	→ 165	1.89E+11	→ 9	1.67E+11	→ 173	1.29E+11	→ 133	1.79E+12
499	2.69E+11	→ 13	2.44E+11	→ 9	2.20E+11	→ 164	1.55E+11	→ 172	1.48E+11	→ 11	1.43E+12
500	4.77E+12	→ 10	8.64E+11	→ 134	1.04E+11	→ 130	5.42E+10	→ 118	3.29E+10	→ 124	5.90E+12
501	1.08E+12	→ 10	5.94E+11	→ 133	5.45E+11	→ 12	4.46E+11	→ 9	2.12E+11	→ 134	3.16E+12
502	2.42E+11	→ 16	1.46E+11	→ 11	1.13E+11	→ 8	8.11E+10	→ 271	4.46E+10	→ 284	8.52E+11
503	1.38E+12	→ 169	2.78E+11	→ 166	2.12E+11	→ 183	1.21E+11	→ 177	6.91E+10	→ 170	2.35E+12
504	4.77E+12	→ 11	1.81E+12	→ 13	4.99E+11	→ 141	4.05E+11	→ 8	2.28E+11	→ 127	8.24E+12
505	1.32E+12	→ 170	3.10E+11	→ 185	2.99E+11	→ 182	2.95E+11	→ 175	3.71E+10	→ 135	2.35E+12
506	2.39E+11	→ 16	1.09E+11	→ 11	8.40E+10	→ 271	6.89E+10	→ 13	4.08E+10	→ 286	7.29E+11
507	8.53E+11	→ 178	7.00E+11	→ 176	4.27E+11	→ 177	1.22E+11	→ 169	5.01E+10	→ 183	2.41E+12
508	8.19E+11	→ 185	6.47E+11	→ 170	2.15E+11	→ 187	1.90E+11	→ 158	1.44E+11	→ 175	2.30E+12
509	1.83E+12	→ 171	2.21E+11	→ 186	1.68E+11	→ 181	3.95E+10	→ 136	1.90E+10	→ 203	2.33E+12
510	5.97E+12	→ 11	5.24E+11	→ 9	4.44E+11	→ 13	4.44E+11	→ 141	3.49E+11	→ 133	8.73E+12
511	1.28E+12	→ 177	4.11E+11	→ 179	2.62E+11	→ 175	9.07E+10	→ 185	8.20E+10	→ 193	2.40E+12
512	5.33E+11	→ 193	4.71E+11	→ 183	3.76E+11	→ 169	3.54E+11	→ 179	1.31E+11	→ 170	2.32E+12
513	1.33E+12	→ 175	6.73E+11	→ 185	1.79E+11	→ 171	4.43E+10	→ 187	2.35E+10	→ 186	2.35E+12
514	5.71E+11	→ 1	9.13E+10	→ 27	8.31E+10	→ 282	7.98E+10	→ 117	5.02E+10	→ 281	1.15E+12
515	3.23E+11	→ 2	1.57E+11	→ 1	8.58E+10	→ 285	6.14E+10	→ 30	5.90E+10	→ 117	1.04E+12
516	9.50E+11	→ 176	8.20E+11	→ 178	2.54E+11	→ 183	1.88E+11	→ 179	5.72E+10	→ 177	2.46E+12
517	2.23E+12	→ 174	4.99E+10	→ 140	4.86E+10	→ 151	1.32E+10	→ 138	1.25E+10	→ 324	2.36E+12
518	6.70E+11	→ 179	4.15E+11	→ 176	3.19E+11	→ 183	2.50E+11	→ 178	2.13E+11	→ 182	2.44E+12
519	1.27E+12	→ 186	3.05E+11	→ 171	2.28E+11	→ 181	2.19E+11	→ 167	9.37E+10	→ 174	2.29E+12
520	8.39E+11	→ 182	6.54E+11	→ 179	2.31E+11	→ 183	1.75E+11	→ 177	1.13E+11	→ 181	2.42E+12
521	1.14E+12	→ 189	3.99E+11	→ 183	2.56E+11	→ 193	9.21E+10	→ 161	5.91E+10	→ 178	2.34E+12
522	9.96E+11	→ 182	6.02E+11	→ 181	2.48E+11	→ 187	1.10E+11	→ 170	8.07E+10	→ 171	2.36E+12
523	1.46E+12	→ 181	4.69E+11	→ 186	3.20E+11	→ 174	1.48E+10	→ 140	8.21E+09	→ 171	2.33E+12
524	4.35E+11	→ 1	2.46E+11	→ 117	1.38E+11	→ 3	1.38E+11	→ 4	1.18E+11	→ 120	1.48E+12
525	8.89E+11	→ 193	4.30E+11	→ 187	3.97E+11	→ 183	1.39E+11	→ 179	5.92E+10	→ 182	2.31E+12
526	1.13E+12	→ 187	2.91E+11	→ 175	2.53E+11	→ 186	1.91E+11	→ 185	1.41E+11	→ 182	2.31E+12
527	1.45E+12	→ 1	3.85E+11	→ 117	1.05E+11	→ 288	7.40E+10	→ 196	3.11E+10	→ 2	2.23E+12
528	7.10E+11	→ 1	3.54E+11	→ 117	8.81E+10	→ 4	4.53E+10	→ 198	4.47E+10	→ 195	1.47E+12
529	3.20E+11	→ 120	3.00E+11	→ 4	1.74E+11	→ 5	1.55E+11	→ 1	7.83E+10	→ 199	1.32E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
530	4.88E+11	→ 21	1.70E+11	→ 275	1.54E+11	→ 2	1.07E+11	→ 1	7.74E+10	→ 22	1.19E+12
531	3.40E+11	→ 1	2.93E+11	→ 4	2.09E+11	→ 3	1.64E+11	→ 120	1.34E+11	→ 117	1.51E+12
532	9.84E+11	→ 1	6.87E+11	→ 2	4.99E+11	→ 22	1.99E+11	→ 277	5.22E+10	→ 26	2.50E+12
533	2.10E+11	→ 17	7.59E+10	→ 274	4.75E+10	→ 18	2.64E+10	→ 45	2.59E+10	→ 296	5.41E+11
534	3.06E+11	→ 3	1.15E+11	→ 5	1.13E+11	→ 122	5.49E+10	→ 123	5.38E+10	→ 117	1.04E+12
535	5.28E+11	→ 5	3.68E+11	→ 123	3.21E+11	→ 2	6.08E+10	→ 202	2.29E+10	→ 318	1.49E+12
536	1.99E+11	→ 17	7.29E+10	→ 274	6.69E+10	→ 18	4.06E+10	→ 11	3.56E+10	→ 300	5.80E+11
537	1.98E+11	→ 2	8.56E+10	→ 123	6.83E+10	→ 290	4.81E+10	→ 5	4.65E+10	→ 35	7.84E+11
538	2.61E+11	→ 17	9.50E+10	→ 274	4.13E+10	→ 298	3.36E+10	→ 46	8.77E+09	→ 300	4.97E+11
539	7.61E+11	→ 3	4.84E+11	→ 122	7.79E+10	→ 201	4.57E+10	→ 320	2.76E+10	→ 203	1.43E+12
540	5.06E+11	→ 5	2.43E+11	→ 123	1.64E+11	→ 3	1.64E+11	→ 2	1.63E+11	→ 122	1.51E+12
541	1.97E+11	→ 18	6.43E+10	→ 276	5.18E+10	→ 17	4.35E+10	→ 301	3.34E+10	→ 50	4.85E+11
542	1.93E+11	→ 18	6.77E+10	→ 276	5.88E+10	→ 17	4.38E+10	→ 302	3.08E+10	→ 53	5.13E+11
543	7.54E+11	→ 39	3.90E+11	→ 284	4.29E+10	→ 42	2.81E+10	→ 286	2.14E+10	→ 45	1.31E+12
544	4.53E+11	→ 3	3.16E+11	→ 122	8.25E+10	→ 2	6.39E+10	→ 123	4.65E+10	→ 5	1.20E+12
545	6.79E+11	→ 42	4.08E+11	→ 286	7.02E+10	→ 48	4.93E+10	→ 63	1.62E+10	→ 56	1.27E+12
546	6.78E+11	→ 293	2.53E+10	→ 295	7.09E+09	→ 170	6.74E+09	→ 209	6.68E+09	→ 185	7.47E+11
547	7.05E+11	→ 295	1.78E+10	→ 196	1.20E+10	→ 171	2.14E+09	→ 150	1.81E+09	→ 139	7.46E+11
548	5.37E+11	→ 3	1.90E+11	→ 5	1.53E+11	→ 122	1.13E+11	→ 123	1.11E+11	→ 120	1.52E+12
549	6.73E+11	→ 5	4.07E+11	→ 2	3.43E+11	→ 123	9.50E+10	→ 4	7.07E+10	→ 208	1.80E+12
550	1.79E+11	→ 19	8.25E+10	→ 20	7.14E+10	→ 7	6.06E+10	→ 278	5.96E+10	→ 152	6.71E+11
551	2.48E+11	→ 19	1.38E+11	→ 159	8.44E+10	→ 278	6.84E+10	→ 304	4.97E+10	→ 10	6.96E+11
552	1.47E+11	→ 20	1.44E+11	→ 12	9.71E+10	→ 188	7.87E+10	→ 10	5.34E+10	→ 279	9.14E+11
553	6.89E+11	→ 13	1.49E+11	→ 192	1.32E+11	→ 197	1.22E+11	→ 9	7.18E+10	→ 20	1.48E+12
554	2.40E+11	→ 19	7.98E+10	→ 278	1.95E+10	→ 58	1.89E+10	→ 306	1.77E+10	→ 10	5.47E+11
555	1.75E+11	→ 20	1.43E+11	→ 12	8.20E+10	→ 19	5.83E+10	→ 279	5.00E+10	→ 313	7.27E+11
556	1.64E+11	→ 12	1.47E+11	→ 188	8.20E+10	→ 20	7.24E+10	→ 190	6.71E+10	→ 153	9.47E+11
557	6.59E+11	→ 1	3.07E+11	→ 25	1.56E+11	→ 26	1.35E+11	→ 4	1.08E+11	→ 280	1.78E+12
558	2.18E+11	→ 13	1.50E+11	→ 20	1.02E+11	→ 12	9.37E+10	→ 192	6.95E+10	→ 8	1.02E+12
559	3.27E+11	→ 25	2.86E+11	→ 1	1.79E+11	→ 28	1.30E+11	→ 280	1.24E+11	→ 4	1.32E+12
560	5.40E+11	→ 27	3.36E+11	→ 3	2.21E+11	→ 282	6.34E+10	→ 29	1.18E+10	→ 314	1.20E+12
561	1.35E+12	→ 1	2.96E+11	→ 26	1.61E+11	→ 27	1.44E+11	→ 281	1.04E+11	→ 3	2.39E+12
562	5.56E+11	→ 152	4.78E+11	→ 7	2.76E+11	→ 159	1.34E+11	→ 9	1.20E+11	→ 162	1.90E+12
563	4.23E+11	→ 8	3.90E+11	→ 152	3.53E+11	→ 7	3.50E+11	→ 153	1.19E+11	→ 11	2.12E+12
564	1.06E+12	→ 8	7.77E+11	→ 11	4.59E+11	→ 153	3.11E+11	→ 163	1.42E+11	→ 7	3.22E+12
565	8.94E+11	→ 159	4.03E+11	→ 10	2.13E+11	→ 6	2.43E+10	→ 19	1.84E+10	→ 286	1.70E+12
566	9.89E+11	→ 4	6.70E+11	→ 2	3.28E+11	→ 1	3.26E+11	→ 28	1.40E+11	→ 283	2.83E+12
567	2.61E+12	→ 2	4.09E+11	→ 30	2.23E+11	→ 1	1.89E+11	→ 285	5.36E+10	→ 34	3.73E+12
568	9.17E+11	→ 12	7.37E+11	→ 11	4.59E+11	→ 163	1.76E+11	→ 13	1.73E+11	→ 162	3.25E+12
569	1.65E+12	→ 12	3.43E+11	→ 9	3.00E+11	→ 162	1.84E+11	→ 45	1.76E+11	→ 10	3.30E+12
570	3.49E+11	→ 48	2.34E+11	→ 300	1.65E+11	→ 63	1.45E+11	→ 42	9.85E+10	→ 302	1.27E+12
571	5.60E+11	→ 53	2.57E+11	→ 302	1.16E+11	→ 300	7.00E+10	→ 46	5.43E+10	→ 48	1.36E+12
572	5.29E+11	→ 309	1.18E+11	→ 194	6.16E+10	→ 209	3.94E+10	→ 310	1.80E+10	→ 200	8.42E+11
573	7.87E+11	→ 46	4.24E+11	→ 298	2.93E+10	→ 51	1.91E+10	→ 72	1.54E+10	→ 61	1.29E+12
574	4.91E+11	→ 310	2.29E+11	→ 196	6.11E+10	→ 315	2.71E+10	→ 314	7.62E+09	→ 171	8.47E+11
575	3.74E+11	→ 45	1.60E+11	→ 9	1.36E+11	→ 296	1.28E+11	→ 50	9.92E+10	→ 297	1.69E+12
576	4.84E+11	→ 316	1.91E+11	→ 195	5.19E+10	→ 309	4.34E+10	→ 194	2.80E+10	→ 317	8.80E+11
577	5.72E+11	→ 47	3.07E+11	→ 299	1.48E+11	→ 45	5.25E+10	→ 50	4.73E+10	→ 296	1.41E+12
578	5.28E+11	→ 317	9.23E+10	→ 194	8.36E+10	→ 200	4.93E+10	→ 209	3.37E+10	→ 310	8.65E+11
579	4.29E+11	→ 9	2.77E+11	→ 50	2.40E+11	→ 301	2.25E+11	→ 10	1.95E+11	→ 12	2.15E+12
580	6.29E+11	→ 315	6.41E+10	→ 310	1.52E+10	→ 314	2.59E+09	→ 202	2.44E+09	→ 326	7.21E+11
581	7.12E+11	→ 314	1.95E+09	→ 201	1.56E+09	→ 138	9.00E+08	→ 140	7.40E+08	→ 323	7.20E+11
582	1.14E+12	→ 165	3.43E+10	→ 336	3.75E+09	→ 51	3.05E+09	→ 304	2.88E+09	→ 266	1.19E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
583	9.86E+11	→ 164	1.71E+11	→ 10	3.74E+10	→ 302	3.49E+10	→ 63	3.33E+10	→ 53	1.37E+12
584	3.78E+11	→ 29	1.89E+11	→ 31	1.51E+11	→ 287	6.71E+10	→ 288	4.56E+10	→ 27	8.63E+11
585	6.10E+11	→ 31	2.21E+11	→ 288	1.24E+10	→ 324	6.17E+09	→ 310	4.25E+09	→ 81	8.64E+11
586	3.01E+12	→ 10	6.51E+11	→ 173	3.71E+11	→ 165	2.30E+10	→ 6	1.65E+10	→ 336	4.21E+12
587	2.58E+12	→ 9	1.17E+12	→ 10	4.71E+11	→ 172	2.79E+11	→ 164	1.44E+11	→ 173	4.93E+12
588	1.15E+12	→ 1	3.02E+11	→ 29	2.02E+11	→ 3	1.08E+11	→ 287	1.04E+11	→ 2	2.34E+12
589	2.46E+12	→ 1	2.95E+11	→ 32	2.03E+11	→ 3	1.42E+11	→ 289	1.36E+11	→ 29	3.52E+12
590	9.55E+11	→ 198	2.53E+11	→ 195	1.12E+11	→ 199	8.62E+10	→ 325	3.79E+10	→ 193	1.69E+12
591	3.17E+12	→ 1	4.31E+11	→ 32	1.90E+11	→ 289	8.52E+10	→ 26	6.66E+10	→ 4	4.07E+12
592	7.76E+11	→ 199	1.57E+11	→ 3	1.24E+11	→ 2	1.00E+11	→ 194	9.93E+10	→ 208	1.87E+12
593	3.58E+12	→ 12	1.14E+12	→ 9	9.87E+11	→ 10	2.55E+11	→ 162	2.54E+11	→ 180	6.94E+12
594	4.24E+12	→ 12	1.50E+12	→ 9	4.23E+11	→ 162	2.51E+11	→ 180	1.91E+11	→ 13	7.14E+12
595	1.91E+12	→ 4	2.30E+11	→ 36	1.69E+11	→ 5	1.43E+11	→ 292	1.31E+11	→ 1	3.17E+12
596	1.09E+12	→ 3	9.20E+11	→ 2	6.29E+11	→ 5	1.63E+11	→ 34	1.11E+11	→ 290	3.59E+12
597	1.55E+12	→ 4	5.29E+11	→ 5	1.86E+11	→ 2	1.63E+11	→ 3	1.45E+11	→ 34	3.27E+12
598	6.65E+12	→ 12	1.08E+12	→ 10	5.03E+11	→ 180	2.85E+11	→ 173	7.44E+10	→ 192	8.94E+12
599	3.51E+12	→ 3	4.37E+11	→ 35	1.91E+11	→ 291	9.35E+10	→ 43	3.09E+10	→ 31	4.35E+12
600	2.96E+12	→ 13	1.38E+12	→ 9	3.78E+11	→ 172	3.77E+11	→ 184	3.04E+11	→ 12	6.03E+12
601	7.79E+11	→ 195	1.63E+11	→ 194	1.33E+11	→ 208	1.10E+11	→ 316	8.07E+10	→ 330	1.58E+12
602	6.05E+11	→ 194	3.15E+11	→ 200	1.49E+11	→ 196	1.01E+11	→ 317	8.14E+10	→ 333	1.59E+12
603	2.28E+11	→ 5	1.06E+11	→ 146	1.02E+11	→ 318	9.94E+10	→ 4	6.61E+10	→ 37	9.18E+11
604	1.25E+12	→ 196	1.16E+11	→ 331	7.53E+10	→ 310	5.04E+10	→ 186	4.24E+10	→ 326	1.70E+12
605	4.18E+11	→ 194	3.95E+11	→ 209	2.74E+11	→ 200	9.78E+10	→ 333	8.37E+10	→ 309	1.63E+12
606	1.87E+11	→ 5	1.11E+11	→ 320	9.74E+10	→ 145	7.77E+10	→ 40	4.66E+10	→ 34	7.64E+11
607	5.55E+12	→ 13	6.02E+11	→ 12	5.34E+11	→ 184	1.85E+11	→ 11	1.51E+11	→ 163	7.65E+12
608	8.47E+11	→ 52	4.33E+11	→ 304	6.85E+09	→ 68	8.28E+08	→ 107	4.11E+08	→ 336	1.29E+12
609	5.78E+11	→ 51	3.16E+11	→ 303	8.45E+10	→ 52	8.27E+10	→ 61	6.77E+10	→ 313	1.29E+12
610	2.81E+11	→ 56	2.55E+11	→ 51	2.36E+11	→ 305	1.92E+11	→ 48	1.38E+11	→ 303	1.37E+12
611	4.79E+11	→ 61	3.37E+11	→ 313	1.10E+11	→ 51	9.44E+10	→ 72	8.09E+10	→ 52	1.25E+12
612	3.50E+11	→ 58	3.20E+11	→ 56	2.09E+11	→ 306	2.08E+11	→ 305	7.68E+10	→ 48	1.49E+12
613	4.36E+11	→ 58	2.62E+11	→ 306	1.61E+11	→ 60	1.39E+11	→ 307	9.08E+10	→ 59	1.47E+12
614	4.71E+11	→ 60	3.18E+11	→ 307	1.79E+11	→ 13	1.68E+11	→ 58	1.44E+11	→ 59	1.65E+12
615	3.02E+11	→ 63	2.97E+11	→ 311	2.00E+11	→ 56	1.07E+11	→ 61	7.90E+10	→ 313	1.32E+12
616	3.86E+11	→ 326	2.01E+11	→ 202	1.53E+11	→ 331	6.69E+10	→ 323	3.28E+10	→ 203	8.62E+11
617	3.85E+11	→ 329	2.11E+11	→ 201	1.70E+11	→ 323	6.40E+10	→ 324	1.14E+10	→ 174	8.45E+11
618	3.68E+11	→ 62	2.84E+11	→ 312	2.10E+11	→ 12	1.75E+11	→ 50	1.61E+11	→ 9	1.71E+12
619	9.70E+11	→ 5	4.08E+11	→ 145	1.44E+11	→ 2	6.79E+10	→ 319	6.43E+10	→ 216	1.90E+12
620	4.96E+11	→ 323	2.06E+11	→ 329	9.50E+09	→ 201	2.10E+09	→ 151	2.06E+09	→ 324	7.18E+11
621	7.10E+11	→ 324	1.62E+09	→ 143	7.54E+08	→ 52	1.84E+08	→ 352	8.88E+07	→ 304	7.12E+11
622	4.38E+11	→ 13	3.41E+11	→ 59	3.06E+11	→ 9	2.77E+11	→ 308	1.40E+11	→ 11	2.28E+12
623	7.96E+11	→ 5	3.83E+11	→ 145	1.58E+11	→ 2	5.56E+10	→ 217	4.64E+10	→ 215	1.71E+12
624	4.80E+11	→ 194	2.39E+11	→ 328	1.78E+11	→ 209	1.31E+11	→ 326	1.22E+11	→ 204	1.53E+12
625	7.45E+11	→ 196	2.81E+11	→ 331	1.08E+11	→ 203	1.02E+11	→ 329	7.10E+10	→ 326	1.52E+12
626	7.02E+11	→ 195	1.59E+11	→ 204	1.32E+11	→ 328	1.32E+11	→ 194	1.32E+11	→ 327	1.70E+12
627	2.54E+11	→ 4	2.41E+11	→ 146	8.92E+10	→ 5	7.88E+10	→ 198	6.70E+10	→ 213	1.21E+12
628	5.87E+11	→ 209	2.53E+11	→ 333	2.50E+11	→ 194	1.04E+11	→ 331	9.00E+10	→ 203	1.68E+12
629	4.10E+11	→ 5	2.06E+11	→ 145	1.76E+11	→ 205	1.12E+11	→ 199	7.07E+10	→ 209	1.46E+12
630	3.99E+11	→ 198	2.28E+11	→ 325	1.83E+11	→ 195	1.31E+11	→ 327	1.04E+11	→ 205	1.59E+12
631	4.03E+11	→ 199	1.85E+11	→ 205	1.50E+11	→ 330	1.47E+11	→ 5	1.12E+11	→ 145	1.61E+12
632	1.51E+12	→ 202	3.28E+11	→ 203	7.42E+10	→ 201	7.32E+10	→ 186	6.96E+10	→ 326	2.16E+12
633	2.03E+12	→ 201	7.76E+10	→ 329	2.64E+10	→ 324	2.30E+10	→ 352	8.00E+09	→ 323	2.18E+12
634	1.07E+12	→ 206	2.69E+11	→ 205	1.97E+11	→ 4	1.06E+11	→ 146	6.99E+10	→ 210	2.05E+12
635	1.40E+12	→ 204	2.19E+11	→ 203	1.89E+11	→ 202	6.23E+10	→ 328	4.08E+10	→ 168	2.19E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\Sigma A^r$ ( $s^{-1}$ )
636	1.16E+12	→ 203	4.49E+11	→ 202	3.25E+11	→ 201	7.60E+10	→ 331	4.29E+10	→ 186	2.21E+12
637	9.08E+11	→ 205	7.02E+11	→ 210	2.26E+11	→ 206	1.17E+11	→ 208	9.01E+10	→ 200	2.43E+12
638	5.46E+11	→ 204	4.32E+11	→ 205	3.41E+11	→ 208	2.12E+11	→ 199	9.45E+10	→ 327	2.20E+12
639	9.99E+11	→ 200	3.66E+11	→ 203	3.39E+11	→ 209	9.89E+10	→ 202	9.54E+10	→ 333	2.23E+12
640	5.54E+11	→ 206	4.39E+11	→ 4	3.00E+11	→ 146	1.88E+11	→ 205	5.79E+10	→ 210	1.78E+12
641	6.77E+11	→ 210	3.59E+11	→ 206	3.08E+11	→ 208	2.17E+11	→ 199	1.13E+11	→ 325	2.26E+12
642	9.49E+11	→ 208	3.78E+11	→ 200	2.68E+11	→ 205	1.38E+11	→ 330	1.15E+11	→ 209	2.21E+12
643	2.67E+11	→ 24	2.38E+11	→ 9	6.67E+10	→ 12	5.67E+10	→ 297	3.79E+10	→ 296	8.47E+11
644	2.62E+11	→ 23	2.34E+11	→ 10	9.25E+10	→ 294	4.67E+10	→ 336	3.07E+10	→ 68	7.53E+11
645	1.86E+11	→ 23	7.35E+10	→ 24	7.10E+10	→ 9	5.70E+10	→ 294	5.30E+10	→ 10	6.37E+11
646	2.57E+11	→ 23	1.06E+11	→ 10	8.75E+10	→ 294	2.31E+10	→ 173	2.09E+10	→ 12	6.21E+11
647	2.42E+11	→ 24	7.47E+10	→ 9	5.84E+10	→ 13	4.51E+10	→ 297	2.52E+10	→ 296	6.11E+11
648	1.79E+11	→ 24	6.28E+10	→ 23	4.89E+10	→ 9	3.78E+10	→ 297	2.35E+10	→ 80	5.10E+11
649	4.41E+11	→ 37	3.17E+11	→ 3	1.69E+11	→ 318	9.82E+10	→ 40	4.96E+10	→ 38	1.18E+12
650	5.64E+11	→ 190	3.15E+11	→ 9	2.99E+11	→ 192	1.07E+11	→ 10	8.53E+10	→ 188	1.63E+12
651	6.11E+11	→ 40	2.21E+11	→ 320	1.21E+10	→ 352	3.28E+09	→ 31	2.44E+09	→ 81	8.56E+11
652	1.05E+12	→ 188	6.42E+11	→ 10	3.66E+10	→ 336	1.28E+10	→ 6	1.14E+10	→ 70	1.83E+12
653	3.12E+12	→ 11	6.91E+11	→ 191	3.53E+11	→ 12	1.30E+11	→ 190	5.16E+10	→ 79	4.70E+12
654	1.64E+12	→ 11	1.03E+12	→ 12	4.46E+11	→ 190	2.86E+11	→ 191	1.92E+11	→ 13	4.12E+12
655	1.65E+12	→ 3	8.74E+11	→ 2	2.56E+11	→ 43	1.60E+11	→ 41	1.19E+11	→ 321	3.41E+12
656	1.64E+12	→ 2	5.47E+11	→ 3	3.06E+11	→ 41	1.30E+11	→ 319	1.01E+11	→ 4	3.24E+12
657	1.90E+12	→ 3	3.22E+11	→ 43	1.27E+11	→ 321	1.25E+11	→ 40	8.15E+10	→ 37	2.75E+12
658	9.79E+11	→ 2	4.62E+11	→ 4	3.07E+11	→ 44	1.69E+11	→ 41	1.31E+11	→ 322	2.36E+12
659	2.93E+12	→ 12	4.83E+11	→ 192	3.36E+11	→ 9	2.11E+11	→ 188	1.80E+11	→ 190	4.53E+12
660	1.40E+12	→ 5	7.27E+11	→ 2	1.83E+11	→ 41	1.23E+11	→ 1	1.15E+11	→ 4	3.15E+12
661	3.15E+12	→ 5	4.53E+11	→ 2	2.37E+11	→ 49	1.77E+11	→ 37	1.19E+11	→ 334	4.47E+12
662	2.68E+12	→ 5	2.51E+11	→ 3	2.21E+11	→ 49	1.38E+11	→ 4	1.12E+11	→ 44	3.98E+12
663	4.96E+12	→ 13	4.69E+11	→ 197	3.47E+11	→ 12	1.43E+11	→ 11	1.29E+11	→ 71	6.61E+12
664	1.11E+11	→ 57	9.38E+10	→ 345	7.32E+10	→ 55	4.79E+10	→ 344	3.49E+10	→ 54	5.17E+11
665	3.68E+11	→ 216	2.62E+11	→ 355	1.46E+11	→ 215	6.15E+10	→ 353	5.02E+10	→ 356	1.01E+12
666	3.17E+11	→ 356	3.11E+11	→ 215	1.35E+11	→ 219	6.58E+10	→ 354	5.50E+10	→ 213	9.99E+11
667	3.57E+11	→ 353	3.14E+11	→ 219	9.01E+10	→ 349	7.82E+10	→ 215	7.32E+10	→ 217	1.00E+12
668	3.81E+11	→ 354	2.82E+11	→ 213	1.19E+11	→ 217	7.20E+10	→ 350	6.13E+10	→ 212	1.01E+12
669	4.03E+11	→ 67	3.00E+11	→ 335	1.48E+11	→ 61	1.43E+11	→ 68	1.34E+11	→ 72	1.32E+12
670	2.69E+11	→ 70	2.36E+11	→ 80	1.81E+11	→ 337	1.49E+11	→ 341	1.47E+11	→ 72	1.29E+12
671	4.11E+11	→ 72	3.12E+11	→ 339	3.10E+11	→ 67	1.02E+11	→ 335	3.99E+10	→ 61	1.25E+12
672	8.20E+11	→ 68	4.28E+11	→ 336	1.00E+10	→ 52	1.02E+09	→ 107	6.66E+08	→ 304	1.26E+12
673	3.31E+11	→ 80	2.20E+11	→ 341	2.10E+11	→ 70	1.41E+11	→ 67	1.23E+11	→ 10	1.46E+12
674	4.51E+11	→ 69	3.46E+11	→ 12	2.43E+11	→ 338	1.95E+11	→ 70	1.74E+11	→ 9	1.90E+12
675	4.75E+11	→ 349	1.55E+11	→ 217	1.14E+11	→ 347	9.05E+10	→ 213	4.39E+10	→ 209	9.43E+11
676	4.41E+11	→ 350	2.84E+11	→ 212	1.03E+11	→ 348	6.22E+10	→ 347	1.76E+10	→ 203	9.33E+11
677	6.82E+11	→ 351	1.45E+10	→ 352	1.90E+09	→ 348	3.92E+08	→ 72	3.14E+08	→ 323	7.00E+11
678	6.97E+11	→ 352	7.56E+08	→ 68	5.42E+08	→ 324	1.55E+08	→ 143	8.69E+07	→ 336	6.99E+11
679	5.35E+11	→ 347	1.03E+11	→ 350	8.70E+10	→ 351	3.72E+10	→ 202	1.04E+10	→ 348	7.83E+11
680	4.47E+11	→ 82	2.71E+11	→ 343	1.40E+11	→ 70	1.33E+11	→ 80	1.06E+11	→ 341	1.48E+12
681	6.49E+11	→ 348	8.34E+10	→ 352	4.16E+10	→ 201	6.70E+09	→ 351	3.40E+08	→ 67	7.82E+11
682	3.63E+11	→ 13	3.14E+11	→ 11	2.70E+11	→ 12	2.69E+11	→ 69	1.93E+11	→ 338	2.46E+12
683	5.62E+11	→ 11	4.36E+11	→ 79	2.64E+11	→ 342	1.37E+11	→ 71	9.95E+10	→ 340	2.06E+12
684	1.98E+12	→ 13	2.13E+11	→ 71	1.88E+11	→ 197	1.84E+11	→ 79	1.70E+11	→ 82	3.48E+12
685	1.08E+12	→ 217	5.44E+11	→ 213	1.95E+11	→ 209	1.01E+11	→ 349	7.15E+10	→ 212	2.21E+12
686	1.93E+12	→ 212	9.47E+10	→ 350	5.63E+10	→ 348	5.36E+10	→ 352	3.32E+10	→ 203	2.23E+12
687	2.96E+11	→ 11	2.57E+11	→ 33	9.42E+10	→ 332	4.55E+10	→ 86	4.29E+10	→ 361	8.24E+11
688	8.41E+11	→ 219	4.52E+11	→ 215	2.69E+11	→ 217	1.82E+11	→ 353	1.10E+11	→ 349	2.19E+12

Table 7. continued.

Index	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$A^r$ ( $s^{-1}$ )	final level	$\sum A^r$ ( $s^{-1}$ )
689	1.21E+12	→ 213	3.70E+11	→ 217	2.03E+11	→ 354	1.85E+11	→ 212	9.78E+10	→ 350	2.24E+12
690	2.48E+11	→ 33	2.36E+11	→ 13	1.15E+11	→ 11	8.91E+10	→ 332	3.81E+10	→ 85	8.44E+11
691	1.14E+12	→ 216	4.47E+11	→ 215	2.35E+11	→ 355	1.12E+11	→ 353	4.27E+10	→ 356	2.23E+12
692	8.21E+11	→ 215	5.68E+11	→ 219	2.79E+11	→ 356	1.91E+11	→ 213	1.08E+11	→ 354	2.22E+12
693	1.26E+12	→ 5	5.14E+11	→ 57	2.16E+11	→ 345	4.97E+10	→ 54	4.71E+10	→ 2	2.16E+12
694	1.87E+12	→ 4	4.73E+11	→ 55	2.50E+11	→ 5	1.77E+11	→ 344	8.79E+10	→ 57	2.96E+12
695	1.10E+11	→ 66	8.27E+10	→ 362	8.16E+10	→ 65	5.74E+10	→ 360	5.61E+10	→ 64	4.56E+11
696	6.94E+11	→ 86	4.01E+11	→ 361	5.13E+10	→ 85	3.74E+10	→ 62	2.86E+10	→ 359	1.28E+12
697	7.54E+11	→ 85	4.30E+11	→ 359	5.31E+10	→ 80	1.93E+10	→ 70	1.33E+10	→ 63	1.29E+12
698	2.28E+11	→ 6	1.22E+11	→ 7	1.22E+11	→ 74	8.61E+10	→ 363	8.58E+10	→ 73	8.94E+11
699	6.95E+11	→ 366	2.57E+10	→ 367	2.16E+10	→ 217	1.24E+10	→ 213	6.08E+09	→ 209	7.71E+11
700	7.21E+11	→ 367	4.26E+10	→ 212	3.33E+09	→ 350	1.44E+09	→ 352	6.50E+08	→ 85	7.71E+11