

$^{48}\text{Ti}^{79}\text{Br}$ Assigned Transitions

Transitions are labeled using four columns, the excited state J value (J'), the ground state J value (J''), the observed transition wavenumber (Observed) and the fit residual multiplied by 10^3 (O-C).

[23.48]⁴Γ_{5/2}⁻⁴Φ_{3/2} (0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
4.5	3.5	23375.9354	-3.9	31.5	32.5	23370.0452	-1.4
5.5	4.5	23376.1386	-8.4	32.5	33.5	23369.9339	-0.7
6.5	5.5	23376.3504	-6.8	33.5	34.5	23369.8255	0.6
7.5	6.5	23376.5655	-4.5	34.5	35.5	23369.7181	0.6
8.5	7.5	23376.7854	0.1	35.5	36.5	23369.6137	1.2
10.5	9.5	23377.2203	-3.2	36.5	37.5	23369.5123	2.4
11.5	10.5	23377.4461	-0.4	37.5	38.5	23369.4119	2.4
12.5	11.5	23377.6690	-2.9	38.5	39.5	23369.3125	1.1
13.5	12.5	23377.8968	-3.1	39.5	40.5	23369.2164	0.8
14.5	13.5	23378.1320	1.6	40.5	41.5	23369.1224	0.3
15.5	14.5	23378.3618	-1.6	41.5	42.5	23369.0286	-2.2
16.5	15.5	23378.5956	-3.3	42.5	43.5	23368.9436	1.9
17.5	16.5	23378.8355	-1.3	43.5	44.5	23368.8562	1.3
18.5	17.5	23379.0713	-6.0	44.5	45.5	23368.7691	-1.1
19.5	18.5	23379.3168	-3.4	45.5	46.5	23368.6844	-3.3
20.5	19.5	23379.5646	-1.0	46.5	47.5	23368.6060	-1.4
21.5	20.5	23379.8125	-1.0	47.5	48.5	23368.5269	-2.3
22.5	21.5	23380.0610	-2.7	48.5	49.5	23368.4492	-4.0
23.5	22.5	23380.3155	-1.0	49.5	50.5	23368.3742	-5.0
24.5	23.5	23380.5687	-2.9	50.5	51.5	23368.3091	1.8
25.5	24.5	23380.8292	0.0	51.5	52.5	23368.2361	-1.4
26.5	25.5	23381.0894	0.3	52.5	53.5	23368.1710	1.3
27.5	26.5	23381.3496	-1.8	53.5	54.5	23368.1026	-1.3
28.5	27.5	23381.6154	-0.7	54.5	55.5	23368.0369	-3.2
29.5	28.5	23381.8823	-0.9	55.5	56.5	23367.9796	1.4
30.5	29.5	23382.1531	0.5	56.5	57.5	23367.9189	0.5
31.5	30.5	23382.4236	-0.7	57.5	58.5	23367.8582	-2.2
32.5	31.5	23382.6958	-2.6	58.5	59.5	23367.8040	-0.3
33.5	32.5	23382.9727	-2.0	59.5	60.5	23367.7504	0.3
34.5	33.5	23383.2529	-0.5	60.5	61.5	23367.6964	-1.4
35.5	34.5	23383.5347	0.4	61.5	62.5	23367.6463	-1.0
36.5	35.5	23383.8163	-1.2	5.5	5.5	23375.0799	-2.5
37.5	36.5	23384.1018	-1.1	6.5	6.5	23375.0972	-1.9
38.5	37.5	23384.3887	-1.8	7.5	7.5	23375.1172	-1.1
39.5	38.5	23384.6785	-1.8	8.5	8.5	23375.1376	-2.5
40.5	39.5	23384.9744	2.1	9.5	9.5	23375.1622	-2.2
41.5	40.5	23385.2646	-1.9	10.5	10.5	23375.1903	-1.0
42.5	41.5	23385.5622	-0.6	11.5	11.5	23375.2193	-1.4
43.5	42.5	23385.8607	-0.6	12.5	12.5	23375.2506	-2.0
44.5	43.5	23386.1599	-1.9	13.5	13.5	23375.2863	-0.8
45.5	44.5	23386.4628	-1.7	14.5	14.5	23375.3224	-1.7
46.5	45.5	23386.7664	-2.8	15.5	15.5	23375.3641	0.4
47.5	46.5	23387.0746	-1.3	16.5	16.5	23375.4054	-0.3
48.5	47.5	23387.3821	-2.6	17.5	17.5	23375.4494	-0.9
49.5	48.5	23387.6920	-3.5	18.5	18.5	23375.4955	-1.8
50.5	49.5	23388.0057	-2.6	19.5	19.5	23375.5438	-3.1

51.5	50.5	23388.3204	-2.6	20.5	20.5	23375.5942	-4.7
52.5	51.5	23388.6370	-2.6	21.5	21.5	23375.6472	-6.2
53.5	52.5	23388.9542	-4.0	22.5	22.5	23375.7093	-1.0
54.5	53.5	23389.2764	-2.3	23.5	23.5	23375.7677	-2.0
55.5	54.5	23389.5990	-2.0	24.5	24.5	23375.8304	-1.2
56.5	55.5	23389.9225	-2.6	25.5	25.5	23375.8948	-1.1
57.5	56.5	23390.2502	-0.9	26.5	26.5	23375.9584	-4.2
58.5	57.5	23390.5771	-1.8	27.5	27.5	23376.0304	-1.3
59.5	58.5	23390.9053	-3.1	28.5	28.5	23376.1029	-0.3
60.5	59.5	23391.2406	1.0	29.5	29.5	23376.1775	0.4
61.5	60.5	23391.5735	0.9	30.5	30.5	23376.2547	1.3
62.5	61.5	23391.9080	0.8	31.5	31.5	23376.3337	1.7
63.5	62.5	23392.2453	1.8	32.5	32.5	23376.4124	-0.6
65.5	64.5	23392.9287	7.9	33.5	33.5	23376.4982	1.9
66.5	65.5	23393.2673	5.4	34.5	34.5	23376.5806	-1.3
2.5	3.5	23374.3716	1.3	35.5	35.5	23376.6683	-1.6
3.5	4.5	23374.1881	2.4	36.5	36.5	23376.7620	1.9
4.5	5.5	23374.0064	2.7	37.5	37.5	23376.8531	0.5
5.5	6.5	23373.8248	0.6	38.5	38.5	23376.9495	2.1
6.5	7.5	23373.6451	-2.3	39.5	39.5	23377.0422	-2.2
7.5	8.5	23373.4706	-2.5	40.5	40.5	23377.1433	-0.3
8.5	9.5	23373.2981	-3.2	41.5	41.5	23377.2444	-0.6
9.5	10.5	23373.1314	-0.7	42.5	42.5	23377.3498	1.2
10.5	11.5	23372.9633	-2.2	43.5	43.5	23377.4545	0.1
11.5	12.5	23372.7985	-2.9	44.5	44.5	23377.5626	0.3
12.5	13.5	23372.6390	-0.9	45.5	45.5	23377.6690	-3.4
13.5	14.5	23372.4809	0.0	46.5	46.5	23377.7817	-2.8
14.5	15.5	23372.3211	-3.3	47.5	47.5	23377.8968	-2.0
15.5	16.5	23372.1690	-1.5	48.5	48.5	23378.0129	-2.2
16.5	17.5	23372.0156	-3.6	49.5	49.5	23378.1320	-1.5
17.5	18.5	23371.8695	-0.8	50.5	50.5	23378.2537	-0.2
18.5	19.5	23371.7217	-2.2	51.5	51.5	23378.3739	-2.5
19.5	20.5	23371.5793	-0.8	52.5	52.5	23378.4999	-0.9
20.5	21.5	23371.4405	1.7	53.5	53.5	23378.6236	-3.5
21.5	22.5	23371.2998	-0.1	54.5	54.5	23378.7497	-5.7
22.5	23.5	23371.1660	2.4	55.5	55.5	23378.8828	-2.8
23.5	24.5	23371.0316	1.9	57.5	57.5	23379.1473	-4.4
24.5	25.5	23370.8978	-0.5	59.5	59.5	23379.4245	-0.7
25.5	26.5	23370.7677	-1.6	60.5	60.5	23379.5646	0.0
26.5	27.5	23370.6450	2.2	61.5	61.5	23379.7044	-1.4
27.5	28.5	23370.5189	0.2	62.5	62.5	23379.8508	2.1
28.5	29.5	23370.3968	-0.3	64.5	64.5	23380.1421	2.4
29.5	30.5	23370.2771	-0.8	65.5	65.5	23380.2945	6.9
30.5	31.5	23370.1613	0.3	66.5	66.5	23380.4473	10.1

[23.48]⁴Γ_{5/2}-⁴Φ_{5/2} (0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
3.5	2.5	23244.7788	0.7	11.5	12.5	23241.8271	-0.1
4.5	3.5	23244.9796	-2.8	12.5	13.5	23241.6673	4.7

5.5	4.5	23245.1918	2.8	13.5	14.5	23241.5028	2.4
6.5	5.5	23245.3979	-0.1	14.5	15.5	23241.3411	0.6
7.5	6.5	23245.6107	1.4	15.5	16.5	23241.1846	1.8
8.5	7.5	23245.8212	-1.7	16.5	17.5	23241.0292	1.7
9.5	8.5	23246.0400	1.1	17.5	18.5	23240.8754	0.9
11.5	10.5	23246.4783	0.6	18.5	19.5	23240.7273	3.6
12.5	11.5	23246.7031	2.5	19.5	20.5	23240.5769	1.6
13.5	12.5	23246.9276	1.9	20.5	21.5	23240.4311	2.0
14.5	13.5	23247.1544	1.2	21.5	22.5	23240.2893	4.1
15.5	14.5	23247.3829	0.0	22.5	23.5	23240.1466	3.1
16.5	15.5	23247.6148	-0.1	23.5	24.5	23240.0058	1.7
17.5	16.5	23247.8513	2.2	24.5	25.5	23239.8734	6.4
18.5	17.5	23248.0851	-0.5	25.5	26.5	23239.7370	4.9
19.5	18.5	23248.3293	4.9	26.5	27.5	23239.6029	3.5
20.5	19.5	23248.5668	1.4	27.5	28.5	23239.4732	4.3
21.5	20.5	23248.8119	3.3	28.5	29.5	23239.3411	0.5
22.5	21.5	23249.0567	2.6	29.5	30.5	23239.2177	3.1
23.5	22.5	23249.3022	0.5	30.5	31.5	23239.0952	4.5
24.5	23.5	23249.5527	1.1	31.5	32.5	23238.9718	2.9
25.5	24.5	23249.8076	4.0	32.5	33.5	23238.8537	4.3
26.5	25.5	23250.0588	1.0	33.5	34.5	23238.7363	4.4
27.5	26.5	23250.3153	1.1	34.5	35.5	23238.6179	1.3
28.5	27.5	23250.5748	2.1	35.5	36.5	23238.5072	3.8
29.5	28.5	23250.8346	1.2	36.5	37.5	23238.3947	2.3
30.5	29.5	23251.0968	0.7	37.5	38.5	23238.2863	2.9
31.5	30.5	23251.3627	1.7	38.5	39.5	23238.1796	3.1
32.5	31.5	23251.6305	2.5	39.5	40.5	23238.0752	3.6
33.5	32.5	23251.9000	2.9	40.5	41.5	23237.9705	1.7
34.5	33.5	23252.1706	2.4	41.5	42.5	23237.8701	2.1
35.5	34.5	23252.4444	3.0	42.5	43.5	23237.7727	3.5
36.5	35.5	23252.7189	2.3	43.5	44.5	23237.6722	-0.2
37.5	36.5	23252.9958	2.0	44.5	45.5	23237.5785	0.9
38.5	37.5	23253.2801	7.1	45.5	46.5	23237.4861	1.4
39.5	38.5	23253.5552	1.0	46.5	47.5	23237.3927	-1.1
40.5	39.5	23253.8397	2.3	47.5	48.5	23237.3057	0.9
41.5	40.5	23254.1209	-1.6	48.5	49.5	23237.2193	1.6
42.5	41.5	23254.4101	0.6	49.5	50.5	23237.1335	1.0
43.5	42.5	23254.7013	2.8	50.5	51.5	23237.0495	0.4
44.5	43.5	23254.9922	2.9	51.5	52.5	23236.9661	-1.5
45.5	44.5	23255.2831	1.1	52.5	53.5	23236.8904	2.5
46.5	45.5	23255.5773	0.8	53.5	54.5	23236.8093	-0.7
47.5	46.5	23255.8744	1.5	54.5	55.5	23236.7311	-2.8
48.5	47.5	23256.1702	-0.9	55.5	56.5	23236.6569	-2.6
50.5	49.5	23256.7710	-1.8	56.5	57.5	23236.5848	-2.0
51.5	50.5	23257.0782	1.9	57.5	58.5	23236.5154	-0.5
52.5	51.5	23257.3784	-3.1	58.5	59.5	23236.4461	-0.5
53.5	52.5	23257.6842	-4.1	59.5	60.5	23236.3787	-0.4
54.5	53.5	23257.9952	-1.7	60.5	61.5	23236.3163	3.2
55.5	54.5	23258.3047	-2.4	6.5	6.5	23244.1390	0.6

56.5	55.5	23258.6183	-0.6	7.5	7.5	23244.1574	1.5
57.5	56.5	23258.9328	0.5	8.5	8.5	23244.1764	0.6
58.5	57.5	23259.2460	-1.3	9.5	9.5	23244.1974	-0.6
59.5	58.5	23259.5649	1.0	10.5	10.5	23244.2228	0.3
60.5	59.5	23259.8845	2.6	11.5	11.5	23244.2494	0.1
3.5	4.5	23243.2337	6.0	12.5	12.5	23244.2788	0.3
4.5	5.5	23243.0452	0.7	13.5	13.5	23244.3091	-0.8
5.5	6.5	23242.8711	7.5	14.5	14.5	23244.3408	-2.8
6.5	7.5	23242.6867	1.7	15.5	15.5	23244.3802	0.5
7.5	8.5	23242.5112	2.4	16.5	16.5	23244.4149	-3.1
8.5	9.5	23242.3397	4.8	17.5	17.5	23244.4580	-0.6
9.5	10.5	23242.1666	3.3	18.5	18.5	23244.5020	0.5
10.5	11.5	23241.9935	-0.6				

[23.48]⁴Γ_{7/2}-⁴Φ_{5/2} (0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
3.5	2.5	23448.2233	-4.4	22.5	23.5	23444.0743	1.5
4.5	3.5	23448.4418	1.3	23.5	24.5	23443.9796	2.2
5.5	4.5	23448.6523	-5.1	24.5	25.5	23443.8895	3.5
6.5	5.5	23448.8754	-3.2	25.5	26.5	23443.7994	0.7
7.5	6.5	23449.0996	-4.3	26.5	27.5	23443.7164	0.8
8.5	7.5	23449.3289	-4.5	27.5	28.5	23443.6400	3.5
9.5	8.5	23449.5626	-4.5	28.5	29.5	23443.5653	3.8
12.5	11.5	23450.2938	0.5	29.5	30.5	23443.4919	1.4
13.5	12.5	23450.5443	0.6	30.5	31.5	23443.4232	-0.4
14.5	13.5	23450.7987	0.4	31.5	32.5	23443.3631	2.4
15.5	14.5	23451.0583	1.3	32.5	33.5	23443.3018	0.0
16.5	15.5	23451.3177	-2.1	33.5	34.5	23443.2481	1.2
17.5	16.5	23451.5876	0.8	34.5	35.5	23443.1957	-0.4
18.5	17.5	23451.8598	1.9	35.5	36.5	23443.1502	1.0
19.5	18.5	23452.1340	0.9	36.5	37.5	23443.1060	-0.2
20.5	19.5	23452.4116	-0.8	37.5	38.5	23443.0636	-3.6
21.5	20.5	23452.6971	1.2	38.5	39.5	23443.0296	-2.6
22.5	21.5	23452.9886	5.2	4.5	4.5	23447.5657	-2.7
23.5	22.5	23453.2805	5.6	5.5	5.5	23447.5874	-4.2
24.5	23.5	23453.5744	3.8	6.5	6.5	23447.6194	0.5
25.5	24.5	23453.8759	5.6	7.5	7.5	23447.6494	-1.1
26.5	25.5	23454.1771	3.1	8.5	8.5	23447.6834	-2.9
27.5	26.5	23454.4877	5.9	9.5	9.5	23447.7251	-1.1
28.5	27.5	23454.7975	4.0	10.5	10.5	23447.7695	-0.9
29.5	28.5	23455.1124	3.1	11.5	11.5	23447.8175	-1.2
30.5	29.5	23455.4330	3.9	12.5	12.5	23447.8702	-1.0
31.5	30.5	23455.7559	3.1	13.5	13.5	23447.9269	-1.0
32.5	31.5	23456.0814	0.9	14.5	14.5	23447.9896	0.8
33.5	32.5	23456.4140	1.9	15.5	15.5	23448.0572	3.4
34.5	33.5	23456.7476	0.0	16.5	16.5	23448.1259	2.9
35.5	34.5	23457.0877	0.6	17.5	17.5	23448.1990	2.7
36.5	35.5	23457.4293	-1.1	18.5	18.5	23448.2754	1.6
37.5	36.5	23457.7782	0.5	19.5	19.5	23448.3571	1.7

38.5	37.5	23458.1267	-2.0	20.5	20.5	23448.4418	0.7
39.5	38.5	23458.4817	-2.0	21.5	21.5	23448.5329	2.0
40.5	39.5	23458.8359	-6.5	22.5	22.5	23448.6279	3.0
41.5	40.5	23459.1988	-6.2	23.5	23.5	23448.7260	3.1
5.5	6.5	23446.3292	-2.8	24.5	24.5	23448.8301	5.1
6.5	7.5	23446.1607	-4.9	25.5	25.5	23448.9348	3.6
7.5	8.5	23445.9980	-5.4	26.5	26.5	23449.0436	2.1
8.5	9.5	23445.8388	-6.6	27.5	27.5	23449.1580	2.2
9.5	10.5	23445.6867	-4.9	28.5	28.5	23449.2790	4.8
10.5	11.5	23445.5363	-5.7	29.5	29.5	23449.3950	-1.6
11.5	12.5	23445.3909	-5.7	30.5	30.5	23449.5242	1.2
12.5	13.5	23445.2514	-4.0	31.5	31.5	23449.6550	1.6
13.5	14.5	23445.1187	0.3	33.5	33.5	23449.9289	2.8
14.5	15.5	23444.9873	1.7	34.5	34.5	23450.0673	-1.1
15.5	16.5	23444.8545	-2.4	35.5	35.5	23450.2154	0.7
16.5	17.5	23444.7321	-0.4	36.5	36.5	23450.3635	-1.4
17.5	18.5	23444.6113	-0.8	37.5	37.5	23450.5196	0.6
18.5	19.5	23444.4966	0.6	38.5	38.5	23450.6730	-4.0
19.5	20.5	23444.3855	1.5	39.5	39.5	23450.8355	-3.4
20.5	21.5	23444.2768	0.7	40.5	40.5	23451.0012	-3.4
21.5	22.5	23444.1707	-1.7				

[23.48] ⁴ Γ _{7/2} ⁻⁴ Φ _{7/2} (0,0)							
J'	J''	Observed	O-C	J'	J''	Observed	O-C
5.5	4.5	23317.7963	-3.3	11.5	12.5	23314.5200	-2.5
6.5	5.5	23318.0162	-3.3	12.5	13.5	23314.3765	-1.7
7.5	6.5	23318.2418	-1.5	13.5	14.5	23314.2384	0.5
8.5	7.5	23318.4701	-1.1	14.5	15.5	23314.1017	0.1
9.5	8.5	23318.7016	-1.3	15.5	16.5	23313.9682	-1.0
10.5	9.5	23318.9347	-4.0	16.5	17.5	23313.8402	-0.6
11.5	10.5	23319.1802	1.8	17.5	18.5	23313.7171	0.8
12.5	11.5	23319.4230	1.0	18.5	19.5	23313.5957	-0.1
13.5	12.5	23319.6675	-2.1	19.5	20.5	23313.4799	0.8
14.5	13.5	23319.9210	-0.1	20.5	21.5	23313.3685	2.1
15.5	14.5	23320.1778	1.3	21.5	22.5	23313.2608	3.2
16.5	15.5	23320.4357	-0.2	22.5	23.5	23313.1567	3.9
17.5	16.5	23320.6975	-1.6	23.5	24.5	23313.0563	4.5
18.5	17.5	23320.9671	0.8	24.5	25.5	23312.9559	1.3
19.5	18.5	23321.2396	2.3	25.5	26.5	23312.8611	-0.3
20.5	19.5	23321.5161	3.9	26.5	27.5	23312.7734	1.4
21.5	20.5	23321.7940	3.0	27.5	28.5	23312.6880	1.5
22.5	21.5	23322.0782	4.5	28.5	29.5	23312.6080	3.1
23.5	22.5	23322.3637	3.5	29.5	30.5	23312.5279	0.9
24.5	23.5	23322.6539	3.4	30.5	31.5	23312.4542	1.2
25.5	24.5	23322.9481	3.4	31.5	32.5	23312.3825	-0.3
26.5	25.5	23323.2450	2.4	32.5	33.5	23312.3174	1.0
27.5	26.5	23323.5488	4.4	33.5	34.5	23312.2531	-0.7
28.5	27.5	23323.8537	3.7	34.5	35.5	23312.1927	-2.2
29.5	28.5	23324.1641	4.8	35.5	36.5	23312.1350	-4.8

30.5	29.5	23324.4777	5.3	36.5	37.5	23312.0833	-5.2
31.5	30.5	23324.7915	2.2	37.5	38.5	23312.0402	-0.6
32.5	31.5	23325.1131	3.2	38.5	39.5	23311.9932	-3.7
33.5	32.5	23325.4380	3.8	39.5	40.5	23311.9505	-6.2
34.5	33.5	23325.7642	2.0	4.5	4.5	23316.7075	-3.1
35.5	34.5	23326.0925	-1.4	5.5	5.5	23316.7312	-1.3
36.5	35.5	23326.4297	0.4	6.5	6.5	23316.7566	-1.8
37.5	36.5	23326.7636	-4.7	7.5	7.5	23316.7882	-0.1
38.5	37.5	23327.1060	-5.0	8.5	8.5	23316.8229	0.8
39.5	38.5	23327.4509	-6.3	9.5	9.5	23316.8603	0.4
40.5	39.5	23327.7982	-8.9	10.5	10.5	23316.9010	-0.7
3.5	4.5	23315.8216	2.0	11.5	11.5	23316.9497	2.3
4.5	5.5	23315.6408	-2.7	12.5	12.5	23316.9977	0.6
5.5	6.5	23315.4700	-1.4	13.5	13.5	23317.0541	3.4
6.5	7.5	23315.2999	-3.4	14.5	14.5	23317.1151	6.8
7.5	8.5	23315.1378	-1.4	15.5	15.5	23317.1678	-2.0
8.5	9.5	23314.9810	2.0	16.5	16.5	23317.2359	0.6
9.5	10.5	23314.8216	-1.3	17.5	17.5	23317.3043	-0.3
10.5	11.5	23314.6587	-12.0				

[23.48]⁴Γ_{9/2}⁻⁴Φ_{7/2}(0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
4.5	3.5	23527.4443	3.8	13.5	13.5	23527.0661	-3.4
5.5	4.5	23527.6694	2.6	14.5	14.5	23527.1505	-4.0
6.5	5.5	23527.9006	1.5	15.5	15.5	23527.2403	-5.0
7.5	6.5	23528.1371	-0.1	16.5	16.5	23527.3376	-4.3
8.5	7.5	23528.3821	1.0	17.5	17.5	23527.4443	0.1
9.5	8.5	23528.6344	3.5	18.5	18.5	23527.5524	0.1
10.5	9.5	23528.8880	1.5	19.5	19.5	23527.6694	3.2
11.5	10.5	23529.1512	3.2	20.5	20.5	23527.7849	-1.0
12.5	11.5	23529.4157	0.4	21.5	21.5	23527.9093	-1.9
13.5	12.5	23529.6915	3.1	22.5	22.5	23528.0382	-4.1
14.5	13.5	23529.9694	2.1	23.5	23.5	23528.1781	-0.9
15.5	14.5	23530.2572	5.2	24.5	24.5	23528.3182	-3.3
16.5	15.5	23530.5497	7.3	25.5	25.5	23528.4693	-0.3
17.5	16.5	23530.8453	6.6	26.5	26.5	23528.6192	-4.1
18.5	17.5	23531.1448	4.1	27.5	27.5	23528.7802	-2.5
19.5	18.5	23531.4527	4.3	28.5	28.5	23528.9487	1.0
20.5	19.5	23531.7703	8.4	29.5	29.5	23529.1144	-3.8
21.5	20.5	23532.0861	5.1	30.5	30.5	23529.2899	-4.4
22.5	21.5	23532.4120	6.1	31.5	31.5	23529.4737	-2.3
23.5	22.5	23532.7439	7.5	32.5	32.5	23529.6605	-2.7
24.5	23.5	23533.0768	4.2	33.5	33.5	23529.8410	-14.8
25.5	24.5	23533.4181	3.7	34.5	34.5	23530.0574	3.4
26.5	25.5	23533.7660	4.2	35.5	35.5	23530.2572	-0.3
27.5	26.5	23534.1169	2.1	5.5	6.5	23525.3386	-0.1
28.5	27.5	23534.4781	4.7	6.5	7.5	23525.1828	-0.1
29.5	28.5	23534.8444	6.8	7.5	8.5	23525.0324	-0.6
30.5	29.5	23535.2117	4.4	8.5	9.5	23524.8893	0.3

31.5	30.5	23535.5826	0.1	9.5	10.5	23524.7469	-3.9
32.5	31.5	23535.9622	-1.0	10.5	11.5	23524.6171	-1.4
33.5	32.5	23536.3511	1.8	11.5	12.5	23524.4920	-0.1
34.5	33.5	23536.7417	0.8	12.5	13.5	23524.3703	-1.2
35.5	34.5	23537.1373	-0.6	13.5	14.5	23524.2545	-2.2
36.5	35.5	23537.5413	1.0	14.5	15.5	23524.1458	-2.0
37.5	36.5	23537.9499	1.9	15.5	16.5	23524.0457	1.0
38.5	37.5	23538.3622	1.1	16.5	17.5	23523.9456	-1.8
39.5	38.5	23538.7815	2.0	17.5	18.5	23523.8539	-2.0
4.5	4.5	23526.5611	-6.3	18.5	19.5	23523.7685	-1.7
5.5	5.5	23526.5975	-2.3	19.5	20.5	23523.6888	-1.4
6.5	6.5	23526.6395	1.5	20.5	21.5	23523.6137	-2.4
7.5	7.5	23526.6809	-1.2	21.5	22.5	23523.5454	-2.2
8.5	8.5	23526.7332	1.2	22.5	23.5	23523.4827	-2.2
9.5	9.5	23526.7866	-1.2	23.5	24.5	23523.4266	-1.4
10.5	10.5	23526.8480	-1.5	24.5	25.5	23523.3705	-6.2
11.5	11.5	23526.9147	-2.3	25.5	26.5	23523.3215	-9.6
12.5	12.5	23526.9844	-6.0				

[23.61]⁴Γ_{5/2}-⁴Φ_{3/2} (0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
2.5	1.5	23499.8457	-1.5	15.5	16.5	23496.8997	2.0
3.5	2.5	23500.0659	4.5	16.5	17.5	23496.8017	0.1
4.5	3.5	23500.2840	2.6	17.5	18.5	23496.7123	0.8
5.5	4.5	23500.5142	6.9	18.5	19.5	23496.6266	-0.8
6.5	5.5	23500.7428	3.7	19.5	20.5	23496.5485	-0.8
7.5	6.5	23500.9846	7.8	20.5	21.5	23496.4799	2.8
8.5	7.5	23501.2244	4.0	21.5	22.5	23496.4084	-2.6
9.5	8.5	23501.4732	3.4	22.5	23.5	23496.3490	-1.8
10.5	9.5	23501.7264	1.2	23.5	24.5	23496.2980	1.3
11.5	10.5	23501.9902	3.7	24.5	25.5	23496.2486	0.0
12.5	11.5	23502.2585	4.9	25.5	26.5	23496.2066	0.1
13.5	12.5	23502.5313	4.6	26.5	27.5	23496.1746	4.1
14.5	13.5	23502.8098	4.1	27.5	28.5	23496.1406	0.0
15.5	14.5	23503.0934	2.9	28.5	29.5	23496.1202	3.5
16.5	15.5	23503.3849	3.5	2.5	2.5	23499.3593	-4.0
17.5	16.5	23503.6791	1.0	3.5	3.5	23499.3869	3.0
18.5	17.5	23503.9857	4.9	4.5	4.5	23499.4061	-4.3
19.5	18.5	23504.2932	3.8	5.5	5.5	23499.4395	-3.2
20.5	19.5	23504.6091	5.1	6.5	6.5	23499.4785	-2.5
21.5	20.5	23504.9266	2.1	7.5	7.5	23499.5256	0.5
22.5	21.5	23505.2526	1.6	8.5	8.5	23499.5763	1.1
23.5	22.5	23505.5845	1.1	9.5	9.5	23499.6326	1.5
24.5	23.5	23505.9234	1.5	10.5	10.5	23499.6947	1.8
25.5	24.5	23506.2657	-0.6	11.5	11.5	23499.7611	0.4
26.5	25.5	23506.6149	-1.9	12.5	12.5	23499.8366	2.3
27.5	26.5	23506.9725	-0.7	13.5	13.5	23499.9142	0.3
28.5	27.5	23507.3351	-0.6	14.5	14.5	23500.0009	1.5
29.5	28.5	23507.7023	-2.0	15.5	15.5	23500.0963	5.5

30.5	29.5	23508.0759	-2.9	16.5	16.5	23500.1927	4.5
31.5	30.5	23508.4579	-1.6	17.5	17.5	23500.2948	3.3
32.5	31.5	23508.8448	-1.4	18.5	18.5	23500.4055	4.7
33.5	32.5	23509.2367	-2.3	19.5	19.5	23500.5186	2.6
34.5	33.5	23509.6370	-0.9	20.5	20.5	23500.6417	4.5
35.5	34.5	23510.0453	2.4	21.5	21.5	23500.7674	3.0
36.5	35.5	23510.4549	0.9	22.5	22.5	23500.9015	4.0
37.5	36.5	23510.8729	1.6	23.5	23.5	23501.0403	3.6
38.5	37.5	23511.2938	-1.0	24.5	24.5	23501.1837	1.8
39.5	38.5	23511.7255	1.1	25.5	25.5	23501.3308	-2.2
40.5	39.5	23512.1611	0.9	26.5	26.5	23501.4923	2.1
41.5	40.5	23512.6044	2.2	27.5	27.5	23501.6537	0.2
2.5	3.5	23498.6865	0.7	28.5	28.5	23501.8218	-1.0
3.5	4.5	23498.5133	0.4	29.5	29.5	23501.9990	0.8
4.5	5.5	23498.3456	-0.2	30.5	30.5	23502.1877	8.1
5.5	6.5	23498.1845	-0.1	31.5	31.5	23502.3706	3.5
6.5	7.5	23498.0331	3.8	32.5	32.5	23502.5627	1.9
7.5	8.5	23497.8791	-0.8	33.5	33.5	23502.7667	6.2
8.5	9.5	23497.7390	2.6	34.5	34.5	23502.9713	4.9
9.5	10.5	23497.6019	3.1	35.5	35.5	23503.1784	-0.1
10.5	11.5	23497.4685	1.4	36.5	36.5	23503.3989	2.2
11.5	12.5	23497.3431	1.7	37.5	37.5	23503.6237	2.6
12.5	13.5	23497.2213	-0.3	38.5	38.5	23503.8569	5.3
13.5	14.5	23497.1069	-0.8	39.5	39.5	23504.0951	6.7
14.5	15.5	23497.0000	0.3	40.5	40.5	23504.3349	3.5

[23.61]⁴Γ_{5/2}-⁴Φ_{5/2} (0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
9.5	8.5	23370.5015	-4.1	5.5	6.5	23367.2267	2.8
10.5	9.5	23370.7527	-6.1	6.5	7.5	23367.0689	2.0
11.5	10.5	23371.0112	-6.5	7.5	8.5	23366.9170	1.4
12.5	11.5	23371.2764	-5.8	8.5	9.5	23366.7699	-0.1
13.5	12.5	23371.5439	-8.6	9.5	10.5	23366.6326	2.6
14.5	13.5	23371.8201	-8.3	10.5	11.5	23366.4965	0.7
15.5	14.5	23372.1021	-7.9	11.5	12.5	23366.3697	2.5
16.5	15.5	23372.3906	-6.8	12.5	13.5	23366.2442	-0.1
17.5	16.5	23372.6818	-8.6	13.5	14.5	23366.1255	-1.7
18.5	17.5	23372.9810	-8.1	14.5	15.5	23366.0149	-0.8
19.5	18.5	23373.2914	-2.2	15.5	16.5	23365.9101	0.1
20.5	19.5	23373.6019	-1.8	16.5	17.5	23365.8097	-0.3
21.5	20.5	23373.9195	-0.1	17.5	18.5	23365.7176	1.9
22.5	21.5	23374.2381	-3.2	18.5	19.5	23365.6279	0.7
23.5	22.5	23374.5667	-2.0	19.5	20.5	23365.5452	0.8
24.5	23.5	23374.9019	0.0	20.5	21.5	23365.4664	-1.0
25.5	24.5	23375.2344	-6.4	21.5	22.5	23365.3950	-1.2
26.5	25.5	23375.5819	-3.6	22.5	23.5	23365.3307	-0.1
27.5	26.5	23375.9348	-1.2	23.5	24.5	23365.2703	-0.8
28.5	27.5	23376.2880	-4.3	24.5	25.5	23365.2160	-1.3
29.5	28.5	23376.6509	-3.5	25.5	26.5	23365.1682	-1.1

30.5	29.5	23377.0176	-4.8	26.5	27.5	23365.1265	-0.6
31.5	30.5	23377.3912	-5.0	27.5	28.5	23365.0814	-9.3
32.5	31.5	23377.7752	-0.6	28.5	29.5	23365.0588	-1.4
33.5	32.5	23378.1560	-5.3	29.5	30.5	23365.0321	-3.5
34.5	33.5	23378.5509	-1.8	30.5	31.5	23365.0086	-8.3
35.5	34.5	23378.9492	-0.7	2.5	2.5	23368.4055	-1.7
36.5	35.5	23379.3521	-1.0	3.5	3.5	23368.4258	-1.2
37.5	36.5	23379.7594	-2.8	4.5	4.5	23368.4498	-2.6
38.5	37.5	23380.1745	-2.8	5.5	5.5	23368.4822	-1.3
39.5	38.5	23380.5958	-2.5	6.5	6.5	23368.5148	-5.5
40.5	39.5	23381.0248	-0.4	7.5	7.5	23368.5626	-0.2
41.5	40.5	23381.4567	-1.5	8.5	8.5	23368.6080	-2.9
2.5	3.5	23367.7240	-4.9	9.5	9.5	23368.6639	-0.8
3.5	4.5	23367.5545	-0.4	10.5	10.5	23368.7207	-3.5
4.5	5.5	23367.3864	-0.2	11.5	11.5	23368.7873	-2.0

[23.61]⁴Γ_{7/2}-⁴Φ_{5/2} (0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
3.5	2.5	23575.7570	-2.1	20.5	20.5	23575.8077	3.6
4.5	3.5	23575.9607	-7.4	21.5	21.5	23575.8768	-0.9
5.5	4.5	23576.1780	-2.5	22.5	22.5	23575.9607	6.0
6.5	5.5	23576.3934	-2.9	23.5	23.5	23576.0359	0.6
7.5	6.5	23576.6159	0.4	24.5	24.5	23576.1213	1.9
8.5	7.5	23576.8354	-2.7	25.5	25.5	23576.2060	-1.0
9.5	8.5	23577.0619	-2.2	26.5	26.5	23576.2984	0.3
10.5	9.5	23577.2931	-0.4	27.5	27.5	23576.3934	0.6
11.5	10.5	23577.5273	1.0	28.5	28.5	23576.4945	3.4
12.5	11.5	23577.7624	-0.1	29.5	29.5	23576.5916	-1.3
13.5	12.5	23578.0016	-0.5	30.5	30.5	23576.6973	-1.0
14.5	13.5	23578.2441	-1.1	31.5	31.5	23576.8077	0.3
15.5	14.5	23578.4916	0.0	32.5	32.5	23576.9191	-0.9
16.5	15.5	23578.7423	0.8	33.5	33.5	23577.0349	-1.4
17.5	16.5	23578.9938	-1.0	34.5	34.5	23577.1553	-1.0
18.5	17.5	23579.2537	2.1	3.5	4.5	23574.1991	-9.7
19.5	18.5	23579.5072	-4.6	4.5	5.5	23574.0323	2.1
20.5	19.5	23579.7764	0.9	5.5	6.5	23573.8572	2.1
21.5	20.5	23580.0426	0.0	6.5	7.5	23573.6817	-1.6
22.5	21.5	23580.3125	-0.7	7.5	8.5	23573.5179	2.9
23.5	22.5	23580.5900	2.7	8.5	9.5	23573.3515	1.4
24.5	23.5	23580.8658	0.9	9.5	10.5	23573.1874	-1.2
25.5	24.5	23581.1477	1.7	10.5	11.5	23573.0273	-3.2
27.5	26.5	23581.7188	0.1	11.5	12.5	23572.8730	-2.8
29.5	28.5	23582.3068	1.2	12.5	13.5	23572.7229	-1.7
30.5	29.5	23582.6054	1.0	13.5	14.5	23572.5765	-0.3
31.5	30.5	23582.9036	-3.2	14.5	15.5	23572.4340	1.5
32.5	31.5	23583.2082	-4.5	15.5	16.5	23572.2929	1.3
33.5	32.5	23583.5224	0.1	16.5	17.5	23572.1558	1.7
34.5	33.5	23583.8286	-6.8	17.5	18.5	23572.0237	3.5
3.5	3.5	23575.0775	-3.3	18.5	19.5	23571.8905	0.8

4.5	4.5	23575.0920	-4.1	19.5	20.5	23571.7651	2.4
5.5	5.5	23575.1146	-0.1	20.5	21.5	23571.6404	1.2
6.5	6.5	23575.1352	-1.5	21.5	22.5	23571.5179	-1.3
7.5	7.5	23575.1618	-0.4	22.5	23.5	23571.4049	2.2
8.5	8.5	23575.2006	9.6	23.5	24.5	23571.2921	2.4
9.5	9.5	23575.2220	-1.2	24.5	25.5	23571.1820	1.7
10.5	10.5	23575.2573	-1.6	25.5	26.5	23571.0746	0.1
11.5	11.5	23575.2997	1.8	26.5	27.5	23570.9786	6.4
12.5	12.5	23575.3400	-0.4	27.5	28.5	23570.8758	2.3
13.5	13.5	23575.3864	0.1	28.5	29.5	23570.7791	0.7
14.5	14.5	23575.4364	0.8	29.5	30.5	23570.6857	-1.1
15.5	15.5	23575.4908	2.4	30.5	31.5	23570.5990	0.1
16.5	16.5	23575.5455	0.9	31.5	32.5	23570.5142	-0.5
17.5	17.5	23575.6099	5.6	32.5	33.5	23570.4339	-0.2
18.5	18.5	23575.6704	3.0	33.5	34.5	23570.3535	-3.6
19.5	19.5	23575.7353	1.3	34.5	35.5	23570.2824	-1.5

[23.61]⁴Γ_{9/2}⁻⁴Φ_{7/2}(0,0)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
4.5	3.5	23652.0327	1.6	17.5	17.5	23651.3082	1.3
5.5	4.5	23652.2305	0.1	20.5	20.5	23651.3669	-1.5
6.5	5.5	23652.4317	1.1	21.5	21.5	23651.3916	0.2
7.5	6.5	23652.6312	-0.7	22.5	22.5	23651.4163	0.5
8.5	7.5	23652.8340	-0.1	25.5	25.5	23651.4944	-2.8
9.5	8.5	23653.0328	-4.5	26.5	26.5	23651.5267	-0.5
10.5	9.5	23653.2406	-1.0	27.5	27.5	23651.5553	-3.5
11.5	10.5	23653.4464	-0.5	28.5	28.5	23651.5908	-1.1
12.5	11.5	23653.6512	-2.0	29.5	29.5	23651.6268	0.2
13.5	12.5	23653.8600	-0.6	30.5	30.5	23651.6595	-3.5
14.5	13.5	23654.0708	1.7	31.5	31.5	23651.7032	2.1
15.5	14.5	23654.2793	0.6	32.5	32.5	23651.7412	0.2
16.5	15.5	23654.4908	1.3	33.5	33.5	23651.7859	3.3
17.5	16.5	23654.7059	4.5	5.5	6.5	23649.9026	0.4
18.5	17.5	23654.9151	0.6	6.5	7.5	23649.7231	8.6
19.5	18.5	23655.1273	-1.5	7.5	8.5	23649.5253	-2.4
20.5	19.5	23655.3411	-3.3	8.5	9.5	23649.3412	-0.8
21.5	20.5	23655.5583	-2.9	9.5	10.5	23649.1559	-1.4
22.5	21.5	23655.7797	0.4	10.5	11.5	23648.9696	-4.0
23.5	22.5	23655.9999	1.1	11.5	12.5	23648.7925	1.5
24.5	23.5	23656.2197	0.0	12.5	13.5	23648.6087	-0.7
25.5	24.5	23656.4425	0.5	13.5	14.5	23648.4315	2.5
26.5	25.5	23656.6670	1.3	14.5	15.5	23648.2494	-0.3
27.5	26.5	23656.8938	2.9	15.5	16.5	23648.0723	0.8
28.5	27.5	23657.1230	5.3	16.5	17.5	23647.8955	1.1
29.5	28.5	23657.3488	2.8	17.5	18.5	23647.7194	0.8
30.5	29.5	23657.5766	0.6	18.5	19.5	23647.5473	3.3
31.5	30.5	23657.8075	-0.1	19.5	20.5	23647.3715	0.8
32.5	31.5	23658.0403	-0.7	20.5	21.5	23647.1970	-1.6
33.5	32.5	23658.2711	-5.0	21.5	22.5	23647.0252	-2.6

34.5	33.5	23658.5136	0.6	22.5	23.5	23646.8605	2.1
35.5	34.5	23658.7531	1.2	23.5	24.5	23646.6883	-2.1
36.5	35.5	23658.9938	1.2	24.5	25.5	23646.5209	-2.9
37.5	36.5	23659.2341	-1.3	25.5	26.5	23646.3594	0.7
38.5	37.5	23659.4796	-0.6	26.5	27.5	23646.1960	0.9
39.5	38.5	23659.7275	0.5	27.5	28.5	23646.0337	0.7
40.5	39.5	23659.9723	-3.8	37.5	38.5	23644.5058	-2.1
9.5	9.5	23651.1938	-0.5	38.5	39.5	23644.3670	0.9
14.5	14.5	23651.2555	-0.8	39.5	40.5	23644.2279	1.4
16.5	16.5	23651.2862	-2.7	40.5	41.5	23644.0915	2.4

[23.48]⁴Γ_{5/2}⁻⁴Φ_{3/2} (1,1)

J'	J''	Observed	O-C	J'	J''	Observed	O-C
7.5	6.5	23412.5859	-1.5	26.5	27.5	23406.5471	1.1
8.5	7.5	23412.7974	-0.6	27.5	28.5	23406.4116	-0.4
9.5	8.5	23413.0102	-0.4	28.5	29.5	23406.2813	1.0
11.5	10.5	23413.4402	-2.1	29.5	30.5	23406.1545	3.8
13.5	12.5	23413.8842	1.9	30.5	31.5	23406.0234	0.0
14.5	13.5	23414.1086	3.1	31.5	32.5	23405.9007	2.4
15.5	14.5	23414.3345	3.7	32.5	33.5	23405.7772	1.7
16.5	15.5	23414.5599	1.7	33.5	34.5	23405.6522	-2.7
17.5	16.5	23414.7894	1.7	34.5	35.5	23405.5364	-0.2
18.5	17.5	23415.0225	3.1	35.5	36.5	23405.4190	-1.5
19.5	18.5	23415.2574	4.2	36.5	37.5	23405.3052	-1.5
20.5	19.5	23415.4902	1.1	37.5	38.5	23405.1935	-1.8
21.5	20.5	23415.7264	-0.7	38.5	39.5	23405.0838	-2.3
22.5	21.5	23415.9645	-2.8	39.5	40.5	23404.9760	-3.2
23.5	22.5	23416.2120	2.4	40.5	41.5	23404.8732	-1.4
24.5	23.5	23416.4535	-0.6	41.5	42.5	23404.7708	-1.6
25.5	24.5	23416.7004	-0.3	42.5	43.5	23404.6684	-4.1
26.5	25.5	23416.9499	0.5	43.5	44.5	23404.5777	2.8
27.5	26.5	23417.2041	3.8	44.5	45.5	23404.4769	-2.8
28.5	27.5	23417.4562	2.8	45.5	46.5	23404.3862	-0.7
29.5	28.5	23417.7104	1.7	46.5	47.5	23404.2968	0.3
30.5	29.5	23417.9659	-0.2	3.5	3.5	23411.0919	0.5
31.5	30.5	23418.2294	3.6	5.5	5.5	23411.1099	-2.5
33.5	32.5	23418.7471	-4.5	7.5	7.5	23411.1413	-0.5
34.5	33.5	23419.0166	-1.2	9.5	9.5	23411.1796	0.0
35.5	34.5	23419.2851	-1.2	10.5	10.5	23411.1996	-2.0
36.5	35.5	23419.5557	-1.2	11.5	11.5	23411.2233	-2.5
37.5	36.5	23419.8288	-1.0	13.5	13.5	23411.2817	1.2
38.5	37.5	23420.1007	-4.2	14.5	14.5	23411.3120	1.0
39.5	38.5	23420.3789	-3.4	15.5	15.5	23411.3387	-4.9
40.5	39.5	23420.6584	-3.5	16.5	16.5	23411.3721	-6.3
41.5	40.5	23420.9386	-5.2	17.5	17.5	23411.4098	-5.5
42.5	41.5	23421.2255	-2.5	18.5	18.5	23411.4528	-1.5
43.5	42.5	23421.5083	-6.1	19.5	19.5	23411.4975	2.0
44.5	43.5	23421.8015	-1.6	20.5	20.5	23411.5405	1.7
45.5	44.5	23422.0897	-4.4	21.5	21.5	23411.5869	2.7

46.5	45.5	23422.3873	-0.2	22.5	22.5	23411.6346	2.8
47.5	46.5	23422.6815	-1.6	23.5	23.5	23411.6820	0.4
48.5	47.5	23422.9820	0.9	24.5	24.5	23411.7357	2.1
49.5	48.5	23423.2850	3.6	25.5	25.5	23411.7897	2.0
50.5	49.5	23423.5918	7.7	26.5	26.5	23411.8464	2.5
5.5	6.5	23409.8571	-2.5	27.5	27.5	23411.9041	1.7
6.5	7.5	23409.6773	-3.2	28.5	28.5	23411.9658	2.7
7.5	8.5	23409.5021	-1.4	29.5	29.5	23412.0249	-1.0
8.5	9.5	23409.3257	-2.9	30.5	30.5	23412.0912	0.3
9.5	10.5	23409.1542	-1.6	32.5	32.5	23412.2317	4.0
10.5	11.5	23408.9855	0.3	34.5	34.5	23412.3738	0.5
11.5	12.5	23408.8160	-0.6	35.5	35.5	23412.4525	3.0
12.5	13.5	23408.6512	1.0	36.5	36.5	23412.5292	1.3
13.5	14.5	23408.4844	-1.6	37.5	37.5	23412.6106	2.0
14.5	15.5	23408.3230	-0.8	38.5	38.5	23412.6940	2.4
15.5	16.5	23408.1632	-0.6	39.5	39.5	23412.7781	1.3
16.5	17.5	23408.0064	0.5	40.5	40.5	23412.8644	0.1
17.5	18.5	23407.8517	1.5	41.5	41.5	23412.9518	-2.3
18.5	19.5	23407.6982	1.6	42.5	42.5	23413.0486	2.4
19.5	20.5	23407.5455	0.3	43.5	43.5	23413.1403	-0.3
20.5	21.5	23407.3947	-1.2	44.5	44.5	23413.2390	1.6
21.5	22.5	23407.2513	2.5	45.5	45.5	23413.3361	-0.4
22.5	23.5	23407.1068	2.9	46.5	46.5	23413.4402	2.3
23.5	24.5	23406.9584	-2.7	47.5	47.5	23413.5459	4.2
24.5	25.5	23406.8203	-0.3	48.5	48.5	23413.6490	1.1
25.5	26.5	23406.6852	3.0				