^{193}Ir(d,p) 1994Ga30,1998Ba42,2008Ba25

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

Target J^π(^{193}Ir g.s.)=3/2$^+$.

1994Ga30: E=16 MeV deuteron beam was produced from the model FN tandem Van de Graaff accelerator at McMaster University. Target was 98.7% and 99.35% enriched ^{193}Ir with thickness of about 30 μg/cm^2. Reaction products were momentum-analyzed with an Enge split-pole magnetic spectrograph (FWHM≈9 keV) and detected by photographic plates. Measured σ(E$_p$,θ) at 16 angles from θ=6° to θ=70°. Deduced levels, J, π, L-transfers, spectroscopic strengths from DWBA analysis. Comparisons with IBFFM and Nilsson model calculations. Report levels up to 880 keV.

1998Ba42 (also 1998Ba85): E=22 MeV deuteron beam was produced from the tandem Van de Graaff at University of Munich. Target was 35 μg/cm^2 98% enriched ^{193}Ir on a 5 μg/cm^2 carbon backing. Reaction products were momentum-analyzed with the Q3D magnetic spectrograph and detected in a gas-filled light-ion detector. Measured $\sigma(\theta)$ at four angles. Report levels up to 1258. See also 2008Ba25 below from the same laboratory by the same first author.

2008Ba25: E=22 MeV deuteron beam was provided by the tandem Van de Graaff accelerator at University of Munich. Target was 130 μg/cm^2 ^{193}Ir (99% enriched) on a 5 μg/cm^2 carbon backing. Reaction products were momentum-analyzed with the Q3D magnetic spectrograph (FWHM=5-6 keV) and detected with a position-sensitive proportional counter. Measured proton spectra, cross sections. Deduced levels. Comparisons with available data and theoretical calculations. Report levels up to 962.

^{194}Ir Levels

1994Ga30 interpreted the odd-parity states in terms of the Interacting Boson-Fermion-Fermion Model (IBFFM) by coupling proton and neutron quasiparticle states to those from the even-even core ^{196}Pt.

E(level)[†]	L[‡]	S[#]	Comments
0.0	1	0.027 *2*	E(level): −0.3 *4* relative to E=112.2 (1994Ga30); 0.10 *16* (1998Ba42). dσ/dΩ=26 μb/sr *6* (1994Ga30). dσ/dΩ=30 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=168 *13* (20°), 133 *13* (30°), 98 *13* (40°), 55 *5* (50°) (1998Ba42).
43.2 *3*	1	0.030 *2*	E(level)=43.3 *3*, dσ/dΩ=32 μb/sr *5* (1994Ga30). dσ/dΩ=24 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=138 *11* (20°), 118 *14* (30°), 89 *12* (40°), 50 *5* (50°); E(level)=43.06 *16* (1998Ba42).
84.0[a] *3*	1	0.197 *6*	L,S: for complex of 82.3+84.3 states. E(level)=83.8 *1*, dσ/dΩ=192 μb/sr *23* for doublet (1994Ga30). dσ/dΩ=162 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=975 *70* (20°), 850 *70* (30°), 560 *60* (40°), 343 *24* (50°); E(level)=83.88 *8* (1998Ba42).
112.2 *3*	1	0.164 *5*	E(level)=112.2, dσ/dΩ=185 μb/sr *23* (1994Ga30). dσ/dΩ=173 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=955 *60* (20°), 685 *60* (30°), 555 *60* (40°), 333 *23* (50°); E(level)=112.22 *8* (1998Ba42).
138.7 *3*	1	0.031 *2*	E(level)=138.3 *4*, dσ/dΩ=37 μb/sr *6* (1994Ga30). dσ/dΩ=37 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=203 *20* (20°), 137 *18* (30°), 62 *12* (40°), 5 (50°); E(level)=138.4 *3* (1998Ba42).
148.8 *3*	3	0.218 *9*	E(level)=148.7 *2*, dσ/dΩ=97 μb/sr *13* (1994Ga30). dσ/dΩ=115 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=610 *40* (20°), 430 *40* (30°), 340 *40* (40°), 193 *17* (50°); E(level)=148.75 *13* (1998Ba42).
161.0 *3*	1	0.095 *4*	E(level)=161.0 *1*, dσ/dΩ=102 μb/sr *29* (1994Ga30). dσ/dΩ=92 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=490 *40* (20°), 448 *40* (30°), 314 *37* (40°), 179 *17* (50°); E(level)=161.14 *13* (1998Ba42).
184.0[&] *3*			dσ/dΩ=6 μb/sr (20°) (2008Ba25).

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^{193}Ir(d,p) 1994Ga30,1998Ba42,2008Ba25 (continued)

^{194}Ir Levels (continued)

E(level)[†]	L[‡]	S[#]	Comments
195.6[bc] *4*	(3)		E(level): 189.7 *12* (1994Ga30). dσ/dΩ=9 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=20 (20°), 18 *5* (30°), 10 (40°), 10 *3* (50°); E(level)=192.70 *12* (1998Ba42).
245.0[a] *3*	3	0.044 *3*	L,S: for the complex of 245.1+245.5 states. E(level)=244.1 *4*, dσ/dΩ=24 μb/sr *4* for doublet (1994Ga30). dσ/dΩ=15 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=89 *15* (20°), 63 *9* (30°), 47 *10* (40°), 30 *5* (50°); E(level)=244.4 *4* (1998Ba42).
254.1 *3*	1	0.025 *7*	E(level)=254.6 *4*, dσ/dΩ=29 μb/sr *5* (1994Ga30). dσ/dΩ=22 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=106 *16* (20°), 77 *11* (30°), 54 *11* (40°), 37 *6* (50°); E(level)=255.1 *3* (1998Ba42).
278.5 *3*	1	0.082 *3*	E(level)=278.9 *3*, dσ/dΩ=98 μb/sr *13* (1994Ga30). dσ/dΩ=107 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=475 *40* (20°), 303 *28* (30°), 345 *40* (40°), 208 *16* (50°); E(level)=278.74 *12* (1998Ba42).
296.6 *3*	3(+1)	0.221 *9*	S: for L=3. E(level)=296.7 *4*, dσ/dΩ=109 μb/sr *5* (1994Ga30). dσ/dΩ=181 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=1030 *70* (20°), 570 *50* (30°), 565 *60* (40°), 287 *21* (50°); E(level)=296.34 *10* (1998Ba42).
308.1[ac] *4*			E(level): 312.1 *14* (1994Ga30), complex of 308.9+314.0 states. dσ/dΩ=14 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=103 *16* (20°), 70 *10* (30°), 58 *11* (40°), 37 *7* (50°); E(level)=311.6 *4* (1998Ba42).
313.8[&] *4*			dσ/dΩ=13 μb/sr (20°) (2008Ba25).
337.8[a] *3*	1	0.012 *3*	L,S: for the complex of 337.5+337.6 states. E(level)=337.0 *4*, dσ/dΩ=47 μb/sr *9* for doublet (1994Ga30). dσ/dΩ=36 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=195 *30* (20°), 118 *19* (30°), 114 *19* (40°), 62 *11* (50°); E(level)=337.4 *4* (1998Ba42).
347.1 *3*	1	0.079 *3*	E(level)=347.2 *3*, dσ/dΩ=89 μb/sr *13* (1994Ga30). dσ/dΩ=78 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=455 *50* (20°), 370 *40* (30°), 240 *31* (40°), 156 *16* (50°); E(level)=346.76 *19* (1998Ba42).
377.0 *3*	1	0.168 *5*	E(level)=377.7 *4*, dσ/dΩ=196 μb/sr *26* (1994Ga30). dσ/dΩ=179 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=1010 *70* (20°), 740 *60* (30°), 645 *70* (40°), 359 *26* (50°); E(level)=376.76 *11* (1998Ba42).
388.0[@] *9*			dσ/dΩ=7 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=20 (20°), 18 *8* (30°), 16 *7* (40°), 11 *5* (50°); E(level)=393.00 *12* (1998Ba42).
394.2[&] *3*			dσ/dΩ=4 μb/sr (20°) (2008Ba25).
419.9[&] *3*			dσ/dΩ=27 μb/sr (20°) (2008Ba25).
424.8[a] *3*	1	0.029 *2*	L,S: for the complex of 419.9+424.8 states. E(level)=422.6 *6*, dσ/dΩ=24 μb/sr *12* for doublet (1994Ga30). dσ/dΩ=30 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=306 *23* (20°), 204 *19* (30°), 145 *24* (40°), 87 *8* (50°); E(level)=422.15 *16* (1998Ba42).
435.6 *3*	(3)	0.025	E(level)=433.6 *15*, dσ/dΩ=9 μb/sr *4* (1994Ga30). dσ/dΩ=8 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=66 *9* (20°), 31 *7* (30°), 33 *6* (40°), 27 *21* (50°); E(level)=433.9 *4* (1998Ba42).
465.7 *3*			E(level)=467.5 *11*, dσ/dΩ=8 μb/sr *2* (1994Ga30). dσ/dΩ=5 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=33 *5* (20°), 28 *5* (30°), 23 *7* (40°), 17 *4* (50°); E(level)=467.7 *4* (1998Ba42).
486.1[&] *3*			dσ/dΩ=11 μb/sr (20°) (2008Ba25).
490.6 *3*			E(level)=490.1 *12*, dσ/dΩ=28 μb/sr *7* (1994Ga30).

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^{193}Ir(d,p) 1994Ga30,1998Ba42,2008Ba25 (continued)

^{194}Ir Levels (continued)

E(level)†	L‡	S#	Comments
			dσ/dΩ=21 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=195 *12* (20°), 114 *9* (30°), 90 *11* (40°), 64 *6* (50°); E(level)=489.55 *18* (1998Ba42).
500.3& *3*			dσ/dΩ=8 μb/sr (20°) (2008Ba25).
501.9c *3*			E(level): from 1998Ba42. Level is not reported in 2008Ba25, although, a level at 500.3 keV, apparently different from 501.9, is reported by these authors.
			E(level)=500.2 *11* (1994Ga30); this could correspond to 500.3 and/or 501.9 levels in 2008Ba25 and 1998Ba42.
			Relative dσ/dΩ=75 *8* (20°), 41 *6* (30°), 34 *6* (40°), 22 *7* (50°) (1998Ba42).
519.1@ *4*			dσ/dΩ=3 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=68 *7* (20°), 17 *3* (30°), 10 *3* (40°), 9 *2* (50°); E(level)=522.5 *4* (1998Ba42).
534.9& *9*			dσ/dΩ=4 μb/sr (20°) (2008Ba25).
544.6 *3*			E(level)=545.7 *12*, dσ/dΩ=20 μb/sr *4* (1994Ga30).
			dσ/dΩ=35 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=217 *13* (20°), 119 *9* (30°), 105 *11* (40°), 62 *5* (50°); E(level)=545.37 *16* (1998Ba42).
555.7 *4*			E(level)=555.8 *14*, dσ/dΩ=5 μb/sr *2* (1994Ga30).
			dσ/dΩ=4 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=39 *7* (20°), 19 *4* (30°), 20 *5* (40°), 11 *4* (50°); E(level)=557.8 *5* (1998Ba42).
570.9@ *4*			dσ/dΩ=2 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=15 (20°), 23 *7* (30°), 33 *10* (40°), 5 (50°); E(level)=572.4 *7* (1998Ba42).
578.4 *3*	1	0.019 *1*	E(level)=579.6 *8*, dσ/dΩ=23 μb/sr *5* (1994Ga30).
			dσ/dΩ=19 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=94 *15* (20°), 94 *8* (30°), 61 *14* (40°), 46 *8* (50°); E(level)=578.97 *23* (1998Ba42).
591.5c *3*			E(level): 591.9 *14* (1994Ga30).
			dσ/dΩ=5 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=15 (20°), 39 *5* (30°), 27 *5* (40°), 12 *3* (50°); E(level)=591.9 *4* (1998Ba42).
598.4& *8*			dσ/dΩ=2 μb/sr (20°) (2008Ba25).
604.4@ *3*			dσ/dΩ=11 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=48 *10* (20°), 64 *6* (30°), 44 *7* (40°), 25 *3* (50°); E(level)=605.73 *17* (1998Ba42).
620.5@ *3*			dσ/dΩ=6 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=14 *5* (20°), 63 *6* (30°), 38 *5* (40°), 22 *4* (50°); E(level)=619.9 *4* (1998Ba42).
639.7 *3*			E(level)=640.7 *13*, dσ/dΩ=13 μb/sr *3* (1994Ga30).
			dσ/dΩ=8 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=38 *5* (20°), 74 *7* (30°), 54 *6* (40°), 28 *10* (50°); E(level)=639.55 *21* (1998Ba42).
657.3@ *3*			dσ/dΩ=14 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=78 *10* (20°), 77 *8* (30°), 49 *6* (40°), 29 *4* (50°); E(level)=656.42 *22* (1998Ba42).
667.9c *3*			E(level): 668.1 *12* (1994Ga30).
			dσ/dΩ=11 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=51 *7* (20°), 66 *7* (30°), 46 *6* (40°), 23 *7* (50°); E(level)=667.5 *4* (1998Ba42).
677.8 *3*			E(level)=677.1 *15*, dσ/dΩ=21 μb/sr *4* (1994Ga30).
			dσ/dΩ=19 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=80 *8* (20°), 94 *9* (30°), 56 *7* (40°), 49 *4* (50°); E(level)=677.49 *23* (1998Ba42).
690.5@ *3*			dσ/dΩ=3 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=11 *4* (20°), 31 *4* (30°), 29 *6* (40°), 18 *2* (50°); E(level)=694.5 *5* (1998Ba42).
698.0& *3*			dσ/dΩ=1 μb/sr (20°) (2008Ba25).
708.1@ *3*			dσ/dΩ=7 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=36 *5* (20°), 40 *5* (30°), 29 *7* (40°), 17 *6* (50°); E(level)=707.7 *4* (1998Ba42).
718.7@ *3*			dσ/dΩ=8 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=31 *4* (20°), 26 *4* (30°), 25 *6* (40°), 18 *2* (50°); E(level)=719.1 *4* (1998Ba42).
748.3@ *4*			dσ/dΩ=11 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=50 *6* (30°), 58 *12* (40°), 40 *5* (50°); E(level)=746.3 *3* (1998Ba42).
762.7 *3*			E(level)=760.7 *15*, dσ/dΩ=17 μb/sr *7* (1994Ga30).
			dσ/dΩ=20 μb/sr (20°) (2008Ba25).
			Relative dσ/dΩ=56 *7* (30°), 80 *15* (40°), 54 *6* (50°); E(level)=759.0 *3* (1998Ba42).

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^{193}Ir(d,p) 1994Ga30,1998Ba42,2008Ba25 (continued)

^{194}Ir Levels (continued)

E(level)[†]	Comments
773.8[c] *3*	E(level): 773.4 *14* (1994Ga30). dσ/dΩ=8 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=41 *6* (30°), 23 *6* (40°), 32 *4* (50°); E(level)=772.6 *4* (1998Ba42).
784.3[&] *3*	dσ/dΩ=1 μb/sr (20°) (2008Ba25).
801.6[@] *5*	dσ/dΩ=3 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=11 *3* (30°), 35 *12* (40°), 10 (50°); E(level)=799.7 *8*(1998Ba42).
813.4[@] *3*	dσ/dΩ=27 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=188 *19* (20°), 88 *10* (30°), 70 *15* (40°), 83 *15* (50°); E(level)=808.7 *3* (1998Ba42).
823.3 *3*	E(level)=819.3 *14*, dσ/dΩ=23 μb/sr *7* (1994Ga30). dσ/dΩ=13 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=68 *9* (30°), 74 *14* (40°), 85 *16* (50°); E(level)=819.2 *3* (1998Ba42).
835.1[@] *5*	dσ/dΩ=4 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=15 *4* (30°), 11 *4* (40°), 10 (50°); E(level)=834.2 *9* (1998Ba42).
858.8[@] *3*	dσ/dΩ=4 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=27 *5* (30°), 28 *8* (40°), 41 *9* (50°); E(level)=853.8 *4* (1998Ba42).
876.8[@] *3*	dσ/dΩ=18 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=63 *13* (30°), 72 *14* (40°), 36 *10* (50°); E(level)=872.4 *3* (1998Ba42).
883.2 *3*	dσ/dΩ=12 μb/sr (20°) (2008Ba25). E(level)=879.0 *15*, dσ/dΩ=16 μb/sr *4* (1994Ga30). Relative dσ/dΩ=45 *12* (30°), 38 *11* (40°), 52 *12* (50°); E(level)=879.4 *6* (1998Ba42).
891.9 *4*	dσ/dΩ=5 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=10 *4* (30°), 10 (40°), 13 *4* (50°); E(level)=888.00 *14* (1998Ba42).
901.3 *3*	dσ/dΩ=6 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=34 *5* (30°), 28 *8* (40°), 21 *6* (50°); E(level)=897.4 *5* (1998Ba42).
908.4 *3*	dσ/dΩ=4 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=10 (20°), 17 *4* (30°), 18 *6* (40°), 17 *4* (50°); E(level)=908.2 *6* (1998Ba42).
924.1 *6*	dσ/dΩ=2 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=10 (20°), 17 *3* (30°), 10 (40°), 19 *4* (50°); E(level)=921.2 *5* (1998Ba42).
934.0 *8*	E(level): level not reported by 2008Ba25. Relative dσ/dΩ=10 (20°), 20 *6* (30°), 12 *4* (40°), 7 *3* (50°) (1998Ba42).
954.6 *4*	dσ/dΩ=61 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=283 *21* (20°), 283 *23* (30°), 141 *20* (40°), 149 *14* (50°); E(level)=948.11 *18* (1998Ba42).
962.2 *6*	dσ/dΩ=20 μb/sr (20°) (2008Ba25). Relative dσ/dΩ=10 (20°), 20 *6* (30°), 12 *4* (40°), 7 *3* (50°); E(level)=965.9 *7* (1998Ba42), although 2008Ba25 do not compare the energies in the two studies in their Table I.
1001.2 *4*	Relative dσ/dΩ=31 *6* (20°), 55 *8* (30°), 30 *7* (40°), 30 *6* (50°) (1998Ba42).
1029.6 *23*	Relative dσ/dΩ=171 *14* (20°), 130 *14* (30°), 90 *14* (40°), 85 *10* (50°) (1998Ba42).
1044.5 *8*	Relative dσ/dΩ=10 (20°), 27 *7* (30°), 21 *7* (40°), 12 *5* (50°) (1998Ba42).
1062.5 *4*	Relative dσ/dΩ=55 *7* (20°), 42 *6* (30°), 44 *9* (40°), 27 *6* (50°) (1998Ba42).
1074.0 *3*	Relative dσ/dΩ=145 *13* (20°), 114 *12* (30°), 88 *14* (40°), 75 *9* (50°) (1998Ba42).
1087.5 *3*	Relative dσ/dΩ=88 *11* (20°), 54 *9* (30°), 65 *11* (40°), 39 *7* (50°) (1998Ba42).
1095.6 *7*	Relative dσ/dΩ=54 *9* (20°), 25 *7* (30°), 10 (40°), 10 (50°) (1998Ba42).
1105.8 *4*	Relative dσ/dΩ=44 *9* (20°), 41 *5* (30°), 43 *9* (40°), 34 *6* (50°) (1998Ba42).
1115.2 *6*	Relative dσ/dΩ=72 *11* (20°), 40 *6* (30°), 10 (40°), 10 (50°) (1998Ba42).
1122.1 *4*	Relative dσ/dΩ=46 *9* (20°), 35 *5* (30°), 45 *9* (40°), 25 *6* (50°) (1998Ba42).
1134.5 *4*	Relative dσ/dΩ=83 *8* (20°), 55 *6* (30°), 43 *9* (40°), 21 *5* (50°) (1998Ba42).
1146.7 *3*	Relative dσ/dΩ=88 *8* (20°), 58 *6* (30°), 42 *9* (40°), 35 *6* (50°) (1998Ba42).
1161.7 *3*	Relative dσ/dΩ=85 *8* (20°), 24 *6* (30°), 48 *9* (40°), 45 *7* (50°) (1998Ba42).
1179.6 *3*	Relative dσ/dΩ=53 *6* (20°), 37 *4* (30°), 30 *6* (40°), 34 *6* (50°) (1998Ba42).
1198.10 *24*	Relative dσ/dΩ=223 *20* (20°), 117 *11* (30°), 107 *15* (40°), 95 *11* (50°) (1998Ba42).
1211.1 *6*	Relative dσ/dΩ=79 *13* (20°), 51 *7* (30°), 32 *8* (50°) (1998Ba42).
1222.7 *4*	Relative dσ/dΩ=111 *6* (20°), 81 *9* (30°), 79 *11* (50°) (1998Ba42).
1234.6 *6*	Relative dσ/dΩ=60 *14* (20°), 37 *6* (30°), 24 *6* (50°) (1998Ba42).
1249.8 *5*	Relative dσ/dΩ=58 *16* (20°), 41 *6* (30°), 57 *8* (50°) (1998Ba42).
1258.0 *9*	Relative dσ/dΩ=34 *15* (20°), 59 *7* (30°) (1998Ba42).

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^{193}Ir(d,p) 1994Ga30,1998Ba42,2008Ba25 (continued)

^{194}Ir Levels (continued)

† From 2008Ba25 up to 963 keV, unless otherwise stated. 1994Ga30 report energies up to 880 keV, which agree well with those in 2008Ba25. Above 963 keV, the levels are reported by 1998Ba42 only. The energies should be treated with caution, as 2008Ba25 pointed out that deviation of a few keV at 1 MeV excitation energy compared to their previous (d,p) measurement (1998Ba42) can result from the extrapolation of the energy calibration. There is probably an additional systematic uncertainty of 0.5 keV for all level energies.

‡ From 1994Ga30, from comparison of experimental cross sections with theoretical (DWBA) values.

Spectroscopic Strength S=(dσ/dΩ)(exp)/N (dσ/dΩ)(DWBA), where normalization factor N=1.55 (1994Ga30).

@ From 1998Ba42 and/or 2008Ba25 only.

& Level from 2008Ba25 only.

a Doublet in 1994Ga30.

b Weak and uncertain peak in 1994Ga30.

c Peak obscured, in 1994Ga30, by an impurity at θ=45°.