^{191}Ir(t,α),(pol t,α) 1979Ba25,1987Ci06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, [1] and Jun Chen[2]	NDS 169,1 (2020)	15-Oct-2020

$J^\pi(^{191}\text{Ir g.s.})=3/2^+$.

1979Ba25 (also 1977Ba09): (t,α) E=15 MeV triton beam was produced from the FN Tandem Van de Graaff accelerator at the Los Alamos Scientific Laboratory. Target was 43 μg/cm^2 94.6% enriched ^{191}Ir metal on a carbon backing. Reaction products were momentum-analyzed with a Q3D magnetic spectrometer (FHWM≈11 keV) and detected with a helical-cathode position sensitive counter. Measured σ at θ=40° and 50°. Deduced levels. Cross section uncertainty ≈10% relative and ≈ 20% absolute. Authors also give calculated cross sections from RPA and DWBA calculations. Interpretation of the lowest $K^\pi=4^+$ bandhead at 1163 keV is given by 1994Bu16, 1997Bu10 and 2000BuZU.

1987Ci06: (pol t,α) E=17 MeV polarized triton beam was produced from the Los Alamos Van de Graaff. Measured analyzing powers (Ay) for levels up to 1163 keV with a Q3D spectrometer (J^π taken from other work). Data at 35° and 40° with spin "UP" and spin "DOWN". The authors also give calculated Ay (40°) from DWBA. The experimental Ay values at 40° are given here under comments. Ay values at 35° are also given by 1987Ci06.

Other:

1982La22: (t,α) E=16 MeV, measured S(p) for ^{191}Ir.

^{190}Os Levels

E(level)[†]	dσ/dΩ (μb/sr)[@]	Comments
0[‡]	22.1 *11*	A_y=−0.72 *7* (1987Ci06).
185[‡] *4*	28.7 *12*	A_y=−0.58 *9* (1987Ci06).
556 *4*	9.2 *7*	Doublet (548+558). Estimated σ=1.2 for 548 and 8.0 for 558 (1979Ba25). Ay(doublet)=−0.02 *14* (1987Ci06).
755 *4*	2.4 *4*	
955[#] *4*	4.4 *5*	A_y=+0.47 *23* (1987Ci06).
1162[#] *6*	27.8 *12*	A_y=+0.27 *7* (1987Ci06). Interpreted as an hexadecapole vibration with main component (≈54% in the analysis by 1997Bu10) from configuration=π3/2[402]+π5/2$^+$[402], $K^\pi=4^+$ (1987Ci06,1997Bu10). Also interpreted as a mixture of phonon components such as g-boson and s-d boson states in the interacting boson model (1985Ba64).
1388 *6*	0.9	
1573 *6*	1.8	
1684 *6*	1.1	
1778 *6*	2.4	
1825 *6*	2.1	
≈1870	1.8	E(level): Multiplet.
1910 *6*	2.5	
1939 *6*	3.4	
1980 *6*	1.5	
2015 *8*	6.4	
2071 *8*	3.5	
2120 *8*	8.0	
2163 *8*	18.3	
2219 *8*	10.9	
2267 *8*	6.0	
2327 *8*	19.0	
2354 *8*	10.6	
2409 *8*	24.2	
2437 *8*	13.1	
2463 *8*	27.4	
2535 *8*	10.5	
2568 *8*	10.3	
2629 *8*	21.4	
2655 *8*	75	

Continued on next page (footnotes at end of table)

^{191}Ir(t,α),(pol t,α) 1979Ba25,1987Ci06 (continued)

^{190}Os Levels (continued)

E(level)[†]	dσ/dΩ (μb/sr)[@]	E(level)[†]	dσ/dΩ (μb/sr)[@]	E(level)[†]	dσ/dΩ (μb/sr)[@]
2690 *8*	31	2791 *8*	25	2963 *8*	40
2719 *8*	22.2	2815 *8*	25	3076 *8*	19.3
2741 *8*	29	2885 *8*	28	3455 *8*	27
2773 *8*	26	2914 *8*	12.8		

† From 1979Ba25. Uncertainty is assigned based a statement in 1979Ba25 that for strong transitions the uncertainties are 4 keV below 1 MeV excitation, 6 keV for 1-2 MeV and 8 keV above 2 MeV. For weaker peaks the uncertainties could be larger.

‡ Negative Ay indicates L-1/2 transfer (d3/2 for L=2) (1987Ci06).

Positive Ay indicates L+1/2 transfer (d5/2 for L=2) (1987Ci06).

@ From 1979Ba25, at 50°. The quoted uncertainties are from 1977Ba09. See also 1987Ci06 for cross section data for levels up to 1163 keV.