$^{90}\text{Zr}(p,\alpha)$, (pol p,α)   1998Gu07,1973MuZC,1975Pe02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

1965Fu09: E_p=22.5 MeV, FWHM≈250-300 keV and E_p=20.2 MeV, FWHM≈110 keV, θ=30°−50°; observe levels at 0 and 380 keV.

1973MuZC: E_p=16.6 MeV, FWHM=40 keV, θ=8°−170°, measured cross sections were not accurate enough for DWBA analysis.

1975Pe02: E_p=22.8 MeV, FWHM=70 keV, θ=10°−120°, DWBA analysis of $\sigma(\theta)$.

1998Gu07: E_p=22 MeV, FWHM≈12 keV, θ=5°−65° and polarization; measured differential cross sections and analyzing powers.

^{87}Y Levels

E(level)[†]	J$^{\pi}$[‡]	σ[#]	Comments
0	1/2$^-$	56.0	
379 *3*	9/2$^+$	13.3	
793 *3*	5/2$^-$	119.0	
981 *3*	3/2$^-$	143.8	
1151 *3*	5/2$^+$	2.3	
1182 *3*	3/2$^-$	2.9	J$^{\pi}$: 5/2$^-$ ruled out from angular distribution and analzying power, Fig. 3 from 1998Gu07.
1201 *3*	5/2$^-$	15.0	J$^{\pi}$: 3/2$^-$ ruled out from angular distribution and analzying power, Fig. 4 from 1998Gu07.
1401 *3*	13/2$^+$	6.6	
1607 *3*	(5/2$^+$,3/2$^-$)	1.8	J$^{\pi}$: assignment in Adopted Levels is 3/2$^-$.
1629 *3*	5/2$^+$	4.9	J$^{\pi}$: assignment in Adopted Levels is (1/2$^-$,3/2$^-$).
1704 *3*	3/2$^-$	1.1	J$^{\pi}$: assignment in Adopted Levels is (5/2$^-$).
1757 *3*	5/2$^+$	1.7	J$^{\pi}$: assignment in Adopted Levels is (5/2,7/2$^-$).
			J$^{\pi}$: other: (5/2$^-$) (1975Pe02).
1802 *3*	5/2$^-$	8.8	J$^{\pi}$: assignment in Adopted Levels is (1/2$^-$,3/2,5/2$^-$).
1846 *3*	1/2$^-$	4.0	J$^{\pi}$: other: (3/2$^-$) (1975Pe02).
1979 *3*	7/2$^-$	63.8	J$^{\pi}$: assignment in Adopted Levels is (7/2,9/2)$^-$.
			J$^{\pi}$: other: (9/2$^-$) (1975Pe02).
2006 *3*	11/2$^+$	20.6	J$^{\pi}$: assignment in Adopted Levels is (7/2).
2113 *3*	5/2$^+$	14.4	
2153 *3*	(9/2$^-$,11/2$^+$)	15.5	J$^{\pi}$: assignment in Adopted Levels is (9/2$^-$).
2184 *3*	7/2$^-$	25.3	E(level),J$^{\pi}$: other: 1975Pe01 report a level at 2170 with J$^{\pi}$=(7/2$^-$).
2209 *3*	3/2$^-$	12.5	
2249 *3*	9/2$^-$	2.9	
2276 *3*	7/2$^+$ & 9/2$^-$	52.2	J$^{\pi}$: assignments in Adopted Levels are (7/2$^+$) and (9/2$^-$).
			E(level),J$^{\pi}$: other: 1975Pe01 report a level at 2270 with J$^{\pi}$=(9/2$^+$).
2302 *3*	13/2$^+$	14.6	
2365 *3*	15/2$^-$ & 7/2$^+$	7.5	
2408 *3*	3/2$^-$	18.4	J$^{\pi}$: other: (15/2$^-$) (1975Pe02); assignment in Adopted Levels is (3/2)$^+$.
2449 *3*	9/2$^-$	10.7	
2531 *3*	11/2$^-$	19.0	
2562 *3*	11/2$^+$	56.0	
2599 *3*	9/2$^-$	37.4	E(level),J$^{\pi}$: other: 1975Pe01 report a level at 2630 with J$^{\pi}$=(13/2$^-$).
2661 *3*	7/2$^+$	8.9	
2682 *3*	11/2$^+$	7.7	
2747 *3*	3/2$^+$	31.1	
2801 *3*	11/2$^+$ & 3/2$^+$	12.7	
2831 *3*	9/2$^-$	10.9	
2903 *3*	(3/2$^-$,5/2$^+$)	25.5	J$^{\pi}$: assignment in Adopted Levels is (3/2$^-$,5/2$^-$).
2960[&]	(13/2$^-$)		
2998 *3*	5/2$^+$	39.1	
3120[&]	(13/2$^-$)		
3324[@]			
3450[&]			J$^{\pi}$: likely 3446.5 in Adopted Levels with (19/2$^-$).

^{90}Zr(p,α), (pol p,α)   **1998Gu07,1973MuZC,1975Pe02 (continued)**

^{87}Y Levels (continued)

E(level)[†]	J$^\pi$[‡]
3500[&]	(11/2$^+$)
3640[@]	
3730[&]	(7/2$^-$)
3840[&]	(11/2$^-$)

[†] From 1998Gu07 with the uncertainties from a general statement, unless indicated otherwise.

[‡] Deduced by 1998Gu07 from angular distributions and analyzing powers. The assignments of 1975Pe02 that differ are noted. The assignments in Adopted Levels that do not include those given here are also noted.

[#] From 1998Gu07, integrated cross section from 5° to 65° in μb.

[@] From 1973MuZC only.

[&] From 1975Pe02 only.