^{181}Ta(d,p) 1973BoYL,1964Er02,1971Re13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 130, 21 (2015)	15-Jul-2015

1973BoYL (later work by the same group as 1964Er02): E(d)=12 MeV, measured $\sigma(\theta)$. Some additional low-lying levels found. Additional information 1.

1964Er02: E=7.021 MeV. Multi-gap magnetic spectrograph. Measured $\sigma(\theta)$, FWHM=8 keV. Levels reported up to 2674 keV.

1971Re13: Coriolis-mixing calculations of energies, cross sections in (d,p) and γ-ray transition probabilities of the four rotational bands produced in coupling of the 1/2[510], 3/2[512] neutron and 7/2[404] proton orbitals in ^{182}Ta. Calculated cross sections are compared with experimental values.

Others: Cohen et al.: Phys Rev 118, 499 (1960), 1953Ha66.

Band assignments are from 1971Re13 based on Coriolis-mixing calculations of (d,p) cross sections and comparisons with experimental values from 1964Er02.

^{182}Ta Levels

E(level)[†]	J$^\pi$[‡]	dσ/dΩ (μb/sr)[#]	Comments
0.0[b]	3$^-$	10.8	J$^\pi$: K=3 (1964Er02). Calculated dσ/dΩ=11.4, 12.0 μb/sr (1971Re13).
97.7[b]	4$^-$	7.1	Calculated dσ/dΩ=5.0, 8.8 μb/sr (1971Re13). J$^\pi$: K=5 in 1964Er02 is not supported.
114.7[c]	4$^-$	18.5	Calculated dσ/dΩ=18.1, 16.0 μb/sr (1971Re13). J$^\pi$: K=3 in 1964Er02 is not supported.
173.8[e]	5$^-$	10.4	Calculated dσ/dΩ=9.0, 11.4 μb/sr (1971Re13). J$^\pi$: K=4 in 1964Er02 is not supported.
237.2[b]	5$^-$	2.6	Calculated dσ/dΩ=1.1, 3.0 μb/sr (1971Re13).
271.1[d]	2$^-$	5.8	Calculated dσ/dΩ=6.1, 6.1 μb/sr (1971Re13).
293.5[c]	5$^-$	15.1	Calculated dσ/dΩ=12.5, 8.2 μb/sr (1971Re13). J$^\pi$: K=4 (1964Er02).
317.0[e]	6$^-$	5.4	Calculated dσ/dΩ=5.0, 5.4 μb/sr (1971Re13).
360.9[d]	3$^-$	7.8	Calculated dσ/dΩ=6.5, 6.0 μb/sr (1971Re13).
395[&b]	(6$^-$)		Calculated dσ/dΩ=0.19, 0.65 μb/sr (1971Re13) for 397,6$^-$.
479.1[ad]	4$^-$	9.2[a]	Calculated dσ/dΩ=3.8, 3.6 μb/sr (1971Re13).
488.6[&ac]	6$^-$	9.2[a]	Calculated dσ/dΩ=2.2, 1.5 μb/sr (1971Re13).
559.4		2.5	
571[&]			
583.9[&]			
629.6[d]	5$^-$	1.4	Calculated dσ/dΩ=1.3, 1.3 μb/sr (1971Re13).
666.6		2.5	
696.0[@]		3.5[@]	
705.0[@]		3.5[@]	
777.3		12.6	J$^\pi$: K=7 assigned in 1964Er02, in agreement with adopted (7$^-$).
803[&d]	(6$^-$)		Calculated dσ/dΩ=0.29, 0.25 μb/sr (1971Re13) for 807, 6$^-$.
841[&]			
866[&]			
897[&]			
1308 *7*			
1484 *7*		16.5	
1511 *7*		20.5	
1544 *7*			
1568 *7*			
1613 *7*			

Continued on next page (footnotes at end of table)

^{181}Ta(d,p) 1973BoYL,1964Er02,1971Re13 (continued)

^{182}Ta Levels (continued)

E(level)[†]	dσ/dΩ (μb/sr)[#]	E(level)[†]	E(level)[†]
1624 *7*		1888 *7*	2274 *7*
1660 *7*		1908 *7*	2369 *7*
1693 *7*		1963 *7*	2394 *7*
1713 *7*	33.9	1984 *7*	2420 *7*
1750 *7*	55.2	2027 *7*	2478 *7*
1764 *7*		2043 *7*	2659 *7*
1803 *7*		2055 *7*	2674 *7*
1827 *7*		2146 *7*	
1853 *7*		2166 *7*	

[†] From 1973BoYL for levels up to 897 keV, from 1964Er02 for levels above this energy.
[‡] From 1971Re13, based on comparison of experimental cross sections with those calculated from Coriolis-mixing calculations.
[#] From 1964Er02, averaged over 120° to 165°. Absolute cross sections are accurate to 20% while relative values have 10% uncertainty. Calculated cross sections, given in comments, are from 1971Re13; first value for Coriolis mixing with a matrix element factor F=1.4, and the second value for no Coriolis mixing.
[@] 1964Er02 list only one level at 700 *3* with cross section of 3.5 μb/sr. Doublet is from 1973BoYL.
[&] Level from 1973BoYL only, uncertainty is probably 3 keV.
[a] 479.1 and 488.6 probably form a doublet, cross section of 9.2 probably is for 479+489, as suggested in 1971Re13 analysis.
[b] Band(A): $\pi 7/2[404]\otimes\nu 1/2[510],K^{\pi}=3^{-}$.
[c] Band(B): $\pi 7/2[404]\otimes\nu 1/2[510],K^{\pi}=4^{-}$.
[d] Band(C): $\pi 7/2[404]\otimes\nu 3/2[512],K^{\pi}=2^{-}$.
[e] Band(D): $\pi 7/2[404]\otimes\nu 3/2[512],K^{\pi}=5^{-}$.

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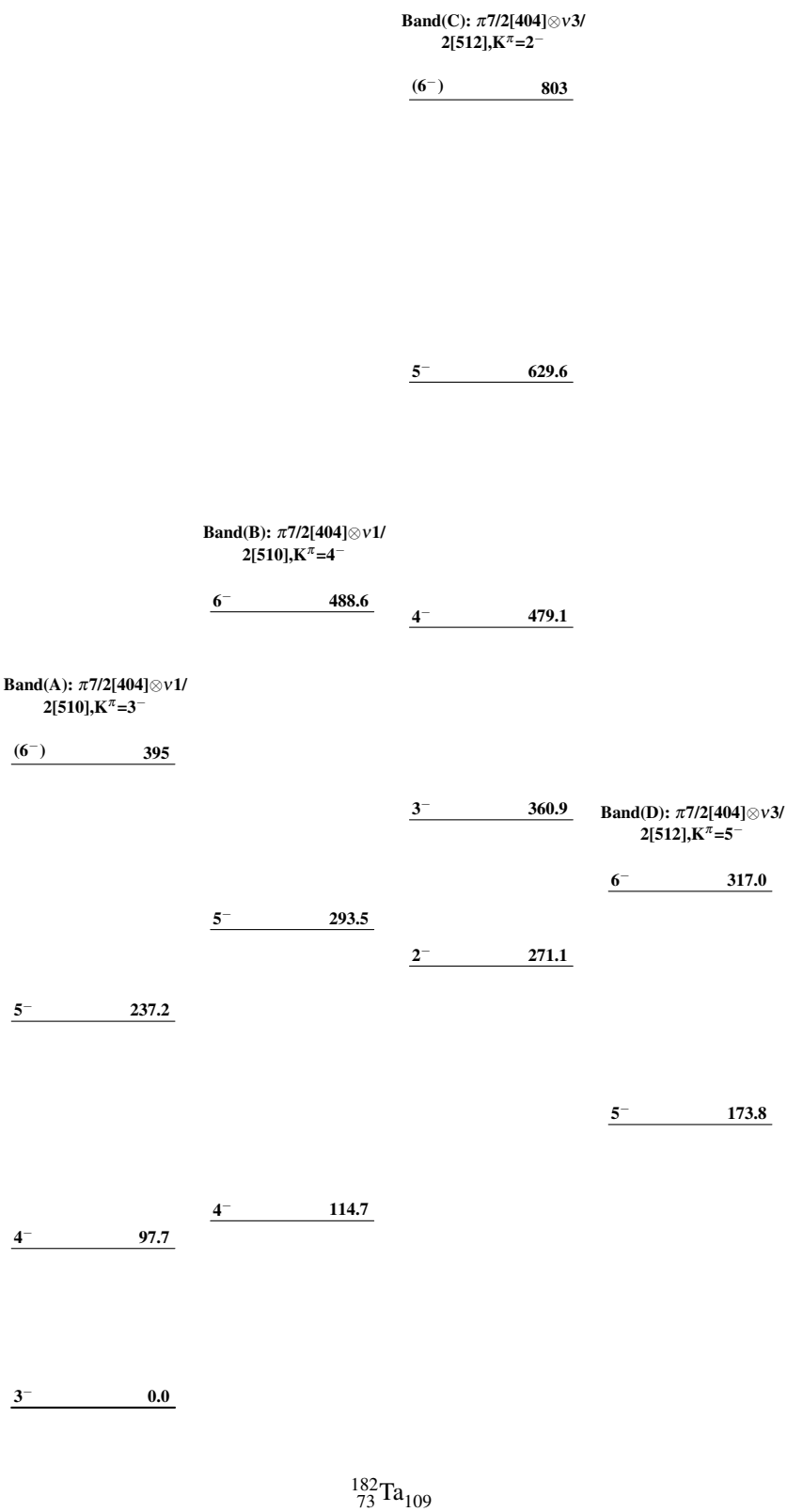

$^{182}_{73}Ta_{109}$