^{138}Ba(d,p) 1968Ra18,1973Ip01,1977St33

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	P. K. Joshi, B. Singh, S. Singh, A. K. Jain	NDS 138, 1 (2016)	15-Oct-2016

1967Wi08: E=12 MeV. Measured $\sigma(\theta)$ using ΔE-E Si detectors, level energies with 5 keV uncertainty.
1968Ra18: E=5-7.5 MeV. Measured $\sigma(\theta)$; FWHM=9. Magnetic spectrometer.
1970Vo04: E=12 MeV. Measured $\sigma(\theta)$; FWHM=13-15. DWBA, magnetic spectrometer.
1973Ip01: E=19 MeV. Measured $\sigma(\theta \leq 172.5°, 7.5°$ steps); FWHM=18. DWBA, magnetic spectrometer.
1974Bo32: E=19 MeV. Measured $\sigma(\theta \leq 172.5°, 7.5°$. steps); FWHM=18. DWBA. Systematic search for L=6 transitions in (d,p) reactions for N=83 nuclei.
1977St33: E=5-8.5 MeV. Measured $\sigma(\theta=50°,90°,140°,170°)$; surface-barrier detectors, FWHM=15. DWBA.
1997HiZZ: (pol d,p) E=22 MeV, measured $\sigma(\theta)$, vector and tensor analyzing powers, J-dependence of T_{20}, finite range DWBA analysis.
Cross section data listed here are from 1973Ip01. Other: 1970Vo04.

^{139}Ba Levels

E(level)[†]	L[‡]	(2J+1)S[‡]	Comments
0.0	3[&]	7.04[#&]	(2J+1)S: 7.60 (1973Ip01), 4.15 (1970Vo04, without cutoff), 5.60 (1970Vo04, with cutoff), 6.08 (1967Wi08), 8.0 (1968Ra18). dσ/dΩ(max)=10.8 mb/sr (15°).
630 *5*	1[&]	2.08[#&]	(2J+1)S: 2.02 (1973Ip01). dσ/dΩ(max)=10.3 mb/sr (7.5°).
1081 *7*	1[&]	0.84[&]	dσ/dΩ(max)=4.24 mb/sr (7.5°). (2J+1)S: 0.88 (1973Ip01).
1283 *7*	5[&]	6.2[&]	dσ/dΩ(max)=1.09 mb/sr (30°). (2J+1)S: 5.70 (1973Ip01).
1419 *7*	3[&]	1.68[&]	dσ/dΩ(max)=3.24 mb/sr (15°). (2J+1)S: 1.83 (1973Ip01).
1539 *10*	6	7.17[#]	dσ/dΩ(max)=0.90 mb/sr (37.5°).
1619 *10*	5	2.17	dσ/dΩ(max)=0.40 mb/sr (30°).
1680 *10*	3	0.81	dσ/dΩ(max)=1.54 mb/sr (7.5°).
1697 *7*	3[&]	1.02[&]	(2J+1)S: 1.12 (1973Ip01). dσ/dΩ(max)=2.13 mb/sr (22.5°).
1745 *10*	(1)	0.21[@]	dσ/dΩ(max)=1.00 mb/sr (7.5°).
1893 *10*			
1930 *10*	3	0.35	dσ/dΩ(max)=0.65 mb/sr (15°).
1943 *10*	3	0.45	dσ/dΩ(max)=0.94 mb/sr (15°).
2106 *10*	(3)	0.52	dσ/dΩ(max)=1.11 mb/sr (15°).
2127 *7*	1	0.62[@]	dσ/dΩ(max)=2.99 mb/sr (7.5°).
2153 *10*	1[a]	0.20[@a]	(2J+1)S: 0.56 (1973Ip01) for L=3. dσ/dΩ(max)=1.17 mb/sr (15°).
2182 *10*	1	0.41[@]	E(level): unresolved doublet (1973Ip01). dσ/dΩ(max)=1.78 mb/sr (7.5°).
2300 *10*	(3)	0.32	dσ/dΩ(max)=0.78 mb/sr (15°).
2361 *10*	3	0.47	dσ/dΩ(max)=1.00 mb/sr (15°).
2378 *10*	3	0.48	dσ/dΩ(max)=1.02 mb/sr (15°).
2433 *10*	1	0.10[@]	dσ/dΩ(max)=0.66 mb/sr (15°).
2478 *10*	1	0.49[@]	dσ/dΩ(max)=2.13 mb/sr (7.5°).
2527 *10*			
2543 *10*	(3)[a]	0.1[a]	
2566 *10*	(1)[a]	0.09[@a]	
2667 *10*			
2739 *10*			

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^{138}Ba(d,p) 1968Ra18,1973Ip01,1977St33 (continued)

^{139}Ba Levels (continued)

E(level)†	L‡	(2J+1)S‡	Comments
2797 *10*			
2857 *15*	(1)[a]	0.05[@a]	
2909 *15*			
2939 *15*			
2993 *10*			
3023 *10*	(1)[a]	0.07[@a]	
3080 *10*	6	2.4[#]	E(level),L,(2J+1)S: from 1974Bo32.
3100 *10*			
3163 *10*	(1)[a]	0.08[@a]	
3177 *10*			
3210 *10*	(1)[a]	0.12[@a]	
3231 *10*			
3249 *10*			
3270 *10*			
3336 *10*			
3379 *10*	(1)[a]	0.1[@a]	
3397 *10*	3[a]	0.54[a]	
3465 *10*	(3)[a]	0.29[a]	
3480 *10*			
3499 *10*			
3524 *10*			
3563 *10*			
3592 *10*			
3603 *10*			
3641 *10*			
3674 *10*			
3699 *10*			
3727 *10*			
3767 *10*			
3811 *10*			
3842 *10*			
3930 *10*			
3944 *10*			
3971 *10*			
4010 *10*			

† From 1968Ra18 (ΔE=10), 1970Vo04 (ΔE=5 and 15), and 1977St33 (ΔE=7), except as noted.

‡ From 1973Ip01, except as noted. The (2J+1)S values given are for L-1/2, unless otherwise stated. L-values are also given 1970Vo04, 1968Ra18 and 1967Wi08. The spectroscopic factors were obtained by comparing the experimental cross sections with the DWBA theoretical values, the latter calculated using DWUCK computer code, and multiplied by a normalization factor of 1.5.

For L+1/2.

@ Average of values for L+1/2 and L-1/2.

& From 1977St33.

a From 1970Vo04. Authors present (2J+1)S values with and without cutoff values, those without cutoff are given here.