^{172}Yb(p,t) 2009Be37,1973Oo01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

1973Oo01: E=19 MeV; 91.5% ^{172}Yb target, magnetic spectrometer + nuclear emulsions, FWHM=10-12 keV; measured σ(E(t),θ).
1983IsZY: E=40 MeV; measured $\sigma(\theta)$.
1985Mi06: E=51.9 MeV; measured $\sigma(\theta)$ to g.s., compared with IBA and DWBA calculations.
2009Be37: E=25 MeV from Munich Tandem accelerator; measured triton spectra (FWHM=4-6 keV for 15-20 MeV tritons) using Q3D magnetic spectrograph, $\sigma(\theta)$ at 5°, 17.5°, 30°. Excited 0^+ states reported. Comparisons with *sd* and *sdpf* interacting boson models. All levels have $J^\pi=0^+$ from L=0 distribution; 14 levels are new in this study.
2012Ge08: calculation of two-nucleon transfer spectroscopic factors using monopole pairing, quadrupole-quadrupole and spin-quadrupole force (PPQSQ) model; comparison with pairing-plus-quadrupole (PPQ) model calculations to investigate influence of spin-quadrupole interaction on the 0^+ states of ^{170}Yb.

^{170}Yb Levels

E(level)[†]	J^π[#]	L[‡]	Σ dσ/dΩ(c.m.) (μb/sr) (1973Oo01).	Comments
0	0^+	0	904 *10*	I(5°)/I(17.5°)=20.8 *5*, I(5°)=1000 *4* (2009Be37).
85 *5*	(2^+)		324 *7*	
277 *5*	(4^+)		77 *3*	
572 *5*	(6^+)		11.3 *12*	
1072 *5*	0^+	0	15.6 *14*	I(5°)/I(17.5°)=4.5 *4*, I(5°)=21.6 *5* (2009Be37).
1144 *5*	2^+		72.2 *23*	Doublet (1973Oo01).
1225 *10*	0^+	0	8.1 *10*	L: from 2009Be37. I(5°)<1.2 *4* (2009Be37).
1331 *5*	4^+		24.4 *18*	Doublet (1973Oo01).
1350 *5*			8.9 *11*	
1360 *5*			8.3 *8*	
1398 *5*			23.5 *12*	Doublet (1973Oo01).
1478 *5*	0^+	0	13.4 *13*	I(5°)/I(17.5°)=18 *3*, I(5°)=16.6 *5* (2009Be37).
1513 *5*			8.7 *10*	
1534 *5*	2^+		8.8 *11*	Contaminant contribution subtracted (1973Oo01).
1568 *5*	0^+	0	27.9 *20*	L: from 2009Be37. I(5°)/I(17.5°)=8.6 *9*, I(5°)=19.4 *5* (2009Be37).
1602 *5*			3.1 *14*	
1634 *5*			10.1 *12*	
1657 *5*	(4^+)		4.2 *12*	
1711 *5*			7.6 *10*	
1780 *5*			27.8 *14*	Doublet (1973Oo01).
1838 *5*			7.4 *7*	
1871 *5*			4.9 *7*	
1971 *10*			12.0 *13*	
2001 *10*			8.6 *8*	Doublet (1973Oo01).
2047 *7*			16.7 *11*	
2088	0^+	0		I(5°)/I(17.5°)=6.2 *4*, I(5°)=14.1 *3* (2009Be37).
2137 *12*			9.0 *11*	
2171 *7*	(2^+)		21.7 *16*	
2186	0^+	0		I(5°)/I(17.5°)=5.8 *9*, I(5°)=8.1 *10* (2009Be37).
2229 *7*			14.2 *12*	
2234	0^+	0		I(5°)/I(17.5°)=8.1 *3*, I(5°)=107.4 *10* (2009Be37).
2249 *7*			8.7 *9*	
2281 *7*			12.9 *12*	
2325 *7*			29.9 *23*	
2352 *12*			7.3 *13*	
2390 *7*			9.9 *17*	
2399	0^+	0		I(5°)/I(17.5°)=4.13 *15*, I(5°)=48.1 *8* (2009Be37).
2437 *12*			16.5 *14*	

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^{172}Yb(p,t) 2009Be37,1973Oo01 (continued)

^{170}Yb Levels (continued)

E(level)[†]	Jπ[#]	L[‡]	Σ dσ/dΩ(c.m.) (μb/sr) (1973Oo01).	Comments
2492 *7*			8.0 *14*	
2501	0+	0		I(5°)/I(17.5°)=3.08 *13*, I(5°)=20.9 *4* (2009Be37).
2539 *7*			20.5 *21*	
2560	0+	0		I(5°)/I(17.5°)=8.3 *5*, I(5°)=14.4 *3* (2009Be37).
2595 *7*			5.1 *16*	
2678 *7*			6.8 *18*	
2854	0+	0		I(5°)/I(17.5°)=12 *6*, I(5°)=6.3 *3* (2009Be37).
2945	0+	0		I(5°)/I(17.5°)=19 *5*, I(5°)=7.0 *4* (2009Be37).
2995	0+	0		I(5°)/I(17.5°)=14 *8*, I(5°)=3.29 *22* (2009Be37).
3027	0+	0		I(5°)/I(17.5°)=7 *3*, I(5°)=7.9 *4* (2009Be37).
3077	0+	0		I(5°)/I(17.5°)=35 *13*, I(5°)=9.2 *3* (2009Be37).
3108	0+	0		I(5°)/I(17.5°)=8 *6*, I(5°)=8.3 *3* (2009Be37).
3150	0+	0		I(5°)/I(17.5°)=11.0 *18*, I(5°)=13.7 *7* (2009Be37).
3153	0+	0		I(5°)/I(17.5°)=8.8 *11*, I(5°)=16.8 *7* (2009Be37).
3325	0+	0		I(5°)/I(17.5°)=5.7 *8*, I(5°)=11.8 *3* (2009Be37).
≈3500				E(level): from 1983IsZY. Jπ: E and excitation probability fit systematics for 5^- & 7^- closely-spaced doublets observed to be strongly excited in (p,t) for neighboring nuclei (1983IsZY).

[†] From 1973Oo01 if uncertainty indicated; from 2009Be37 otherwise (uncertainty unstated by authors).

[‡] Based on I(5°)/I(17.5°)>3 for levels observed by 2009Be37. From 1973Oo01, based on comparison of $\sigma(\theta)$ at four angles with $\sigma(\theta)$ for known 0^+ and 2^+ states in neighboring nuclei, otherwise.

[#] From L(p,t)=0 for 0^+ states. From σ and level energy spacing otherwise (from 1973Oo01).