^{172}Yb(^{3}He,α), ^{172}Yb(^{3}He,$\alpha\gamma$) 1971Bu01,2001Vo05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan	NDS 151, 334 (2018)	30-Jun-2018

1971Bu01: E(^{3}He)=28 MeV, 8 angles; Yb metal targets enriched to 97.15% in ^{172}Yb; measured E(level) (mag spect, FWHM=20-30 keV), $\sigma(\theta)$ (θ(c.m.) $\approx$ 10°−60°), differential cross sections.

2001Vo05: E(^{3}He)=45 MeV; self-supporting target; measured particle-γ coin using CACTUS array (8 Si-Si(Li) particle telescopes At θ(lab)=45°, 28 NaI detectors surrounding target and particle detectors); deduced level density, radiative strength function; observed pygmy resonance. See also 2005Ag15, 2004Ag05, 2012GuZY.

The data listed here are from 1971Bu01, except where noted.

^{171}Yb Levels

E(level)[†]	Jπ[‡]	L[#]	S	Comments
78				Complex; composed of 66.7 and 75.9 levels (see ^{171}Yb Adopted Levels).
167		4	0.060	
215				
233				
250				
320				
369		6	1.42	E(level): adopted value (rounded) used for energy calibration.
≈460				
≈480				
647	(17/2$^+$)			Jπ: assigned as 17/2$^+$ 7/2[633] state (adopted E(level)=647.9). Angular distribution is consistent with population by indirect processes rather than by L=8 transition.
828				
≈900				
946				
987	(7/2$^-$) & (9/2$^+$)			E(level): complex; composed of 7/2$^-$ 5/2[523] state (adopted E(level)=971) and 9/2$^+$ 5/2[642] state (adopted E(level)=984.0).
1028				E(level): complex; composed of adopted 1024.6 and 1039.1 levels.
1083 *3*	(7/2$^-$) & (9/2$^-$)	(3+5)		Jπ: assigned as 7/2$^-$ 3/2[521] state (probably incorrect; see ^{171}Yb Adopted Levels) and 9/2$^-$ 5/2[523] state (expected at 1086 keV). Assignments are consistent with large (^{3}He,α) cross section and (^{3}He,α)/(d,t) cross-section ratio.
1120 *3*	(13/2)$^+$	6	1.15	Jπ: assigned as 13/2$^+$ 5/2[642] state.
1175				
1208	(11/2$^-$)			Jπ: assigned as 11/2$^-$ 5/2[523] state.
1245				
1311				E(level): complex; composed of adopted 1300 and 1320 levels.
1347				
1407 *3*	(13/2)$^+$	6	0.38	
1457				
1487				
1522		0,1		
1560				
≈1630				
≈1655				
≈1775				
3350 *60*				E(level): pygmy resonance (2001Vo05); not a discrete level. Γ: 0.97 MeV *16* (2001Vo05). other: 0.95 MeV *31* (2004Ag05) At 3.35 MeV *19*.

[†] ΔE=3 keV for intense peaks (assumed by evaluator to be those with dσ/d$\Omega\geq$40) (1971Bu01).

[‡] Tentative values (1971Bu01) from (^{3}He,α) cross sections, L values, and level-energy systematics. See ^{171}Yb Adopted Levels for

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^{171}Yb Levels (continued)

evaluator's assignments.

DWBA analysis (1971Bu01) of angular distributions and (^{3}He,α)/(d,t) cross-section ratios ((d,t) cross sections taken from 1966Bu16).