^{172}Yb(^{3}He,d), (α,t) 1971On02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	V. S. Shirley	NDS 75,377 (1995)	1-Oct-1993

E(^{3}He)=28 MeV (8 angles used), E(α)=30 MeV (2 angles used); metallic Yb targets enriched to 97.15% in ^{172}Yb; measured E(level) (mag spect with FWHM=18-21 for (^{3}He,d) and 14-17 for (α,t)), angular distributions, differential cross sections (at θ=40° for (^{3}He,d), 45° for (α,t)).

^{173}Lu Levels

E(level)[†‡]	Jπ[#]	L[@]	C^{2}S[&a]	Comments
0.0	7/2$^+$	4	1.53	Jπ: 7/2$^+$ 7/2[404] state.
125[d] 2	5/2$^-$ & 1/2$^-$	3+1		Complex; composed of 123.7 level (assigned L=3) and 128.3 level (assigned L=1) observed in ^{173}Hf ε decay. C^{2}S=1.34 if entire cross section is for 123.7 level; C^{2}S=0.46 if entire cross section is for 128.3 level.
199[d] 2	9/2$^-$	5	2.18	
265[bd] 2	3/2$^-$	1	0.26	
359[b] 2	5/2$^+$	2	1.66	Jπ: 5/2$^+$ 5/2[402] state.
432[e] 2	1/2$^+$ & 3/2$^+$	0+2		Complex; composed of 425.3 level (assigned L=0) and 434.9 level (assigned L=2) observed in ^{173}Hf ε decay. C^{2}S=0.22 if entire cross section is for 425.3 level; C^{2}S=0.46 if entire cross section is for 434.9 level.
≈551[be]	5/2$^+$ & 7/2$^+$	2+4		Complex; composed of 552.1 level (assigned L=2) observed in ^{173}Hf ε decay and possibly 576.3 level (assigned L=4) seen in ^{173}Yb(p,nγ), (d,2nγ). C^{2}S=0.12 if entire cross section is for 552.1 level; C^{2}S=0.72 if entire cross section is for 576.3 level.
582[b] 2	11/2$^-$	5	2.70	Jπ: 11/2$^-$ 9/2[514] state.
660[b]				
721				
736[c]				
≈894[f]	3/2$^-$	1	0.034	
958[bf]	(5/2$^-$)	(3)	0.36	L: assignment not consistent with cross-section ratios: σ(^{3}He,d)/σ(α,t)=2.7 exp, 0.84 theory.
1047				
1151[cf] 2	9/2$^-$	5		
≈1166[g]	1/2$^-$ & 3/2$^-$	1	0.92	Complex; composed of 1162.4 and 1192.7 levels, both assigned L=1 and both observed in ^{173}Hf ε decay. C^{2}S: combined value for the 1162.4 and 1192.7 levels.
1275[bg] 2	7/2$^-$	3	1.08	
1296[b] 2				
1375				
1410 2	(1/2$^+$)	(0)	0.42	
1516				
1714 2				
1744 2	(1/2$^+$)	(0)	0.42	
1768				
1787				
1860 2				
1940				
1982				
2024 2				
2053				
2092				

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^{172}Yb(^{3}He,d), (α,t) 1971On02 (continued)

^{173}Lu Levels (continued)

E(level)[†‡]
2140
2218 *2*
2248

† Uncertainties are 2 keV for strongly populated states (estimated by evaluator to have dσ/d$\Omega \geq 20$ μb/sr).
‡ From (^{3}He,d) except where noted.
# From L-values, spectroscopic factors, and authors′ comparison of ^{173}Lu structure with expectations based on Nilsson-model calculations, including effects of pairing and Coriolis mixing. See ^{173}Lu Adopted Levels for evaluator′s assignments.
@ Inferred from DWBA analyses of (^{3}He,d) angular distributions and σ(^{3}He,d)/σ(α,t) cross-section ratios.
& C^2S (=dσ/dΩ(exp)/N dσ/dΩ(theory)) for ^{172}Yb(^{3}He,d) at 40°, normalized to C^2S=1.66 for the 359 level, consistent with Nilsson-model expectations.
[a] See 1971On02 for spectroscopic factors for ^{172}Yb(α,t) at 45°.
[b] Average from (^{3}He,d) and (α,t).
[c] From (α,t).
[d] 1/2[541] band member.
[e] 1/2[411] band member.
[f] 3/2[532] band member.
[g] 1/2[530] band member.