^{156}**Dy(^{3}He,d),^{156}Dy(α,t)**   **1977Pa23**

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	N. Nica	NDS 132, 1 (2016)	4-Dec-2015

Reactions studied with E(^{3}He)=24 MeV and E$_\alpha$=30 MeV on enriched ($\geq$ 99%) target. Reaction products were measured in magnetic spectrographs with FWHM $\approx$ 14 keV. L are values from (^{3}He,d) angular distributions and ratios of (^{3}He,d) and (α,t) cross sections. Band assignments are from comparison of measured and calculated cross sections including pairing and Coriolis coupling.

1976StZK: Abstract of results given in 1977Pa23.

Measured S$_p$=3614 *20*.

<div align="center">^{157}Ho Levels</div>

Additional information 1.

E(level)†‡	J$^{\pi\#}$	L$^{@}$	Comments
0^d	7/2$^-$		
53^e	5/2$^+$	2	
66^f	7/2$^+$	4	
176		2	
188^d	11/2$^-$	5	
215		2	
272^g	(3/2)$^{+b}$	2	J$^\pi$: Assignment in Adopted Levels is 3/2$^+$,5/2$^+$.
356^g	(5/2)$^+$	2	J$^\pi$: Assignment in Adopted Levels is 3/2$^+$,5/2$^+$.
374^g	(7/2)$^+$	4	J$^\pi$: No assignment is given in Adopted Levels.
431		2,3	J$^\pi$: Assignment in Adopted Levels is 3/2$^+$,5/2,7/2$^-$.
453		4	J$^\pi$: Assignment in Adopted Levels is 7/2$^+$,9/2$^+$.
481^h	1/2$^-$	1	J$^\pi$: Assignment in Adopted Levels is 1/2$^-$,3/2$^-$.
503^{ad}	15/2$^-$		
525^h	5/2$^-$	3	
549		3	J$^\pi$: Assignment in Adopted Levels is 5/2$^-$,7/2$^-$.
570^h	3/2$^-$	1	J$^\pi$: Assignment in Adopted Levels is 1/2$^-$,3/2$^-$.
585^a			
628^i	1/2$^+$	0	
638^i	3/2$^+$	2	
652^h	9/2$^-$	(5)	
692			
705			
729^h	7/2$^-$	^{c}	J$^\pi$: No assignment is given in Adopted Levels.
762$^\&$			
817		2	J$^\pi$: Assignment in Adopted Levels is 3/2$^+$,5/2$^+$.
872^a			J$^\pi$: Assignment in Adopted Levels is 13/2$^-$.
894$^\&$			
910$^\&$			
946			
966		4	
996^j	11/2$^-$	$\geq$5	
1141		3	J$^\pi$: Assignment in Adopted Levels is 5/2$^-$,7/2$^-$.
1158			
1176$^\&$			
1200		3,4	

<div align="center">Continued on next page (footnotes at end of table)</div>

^{156}Dy(^{3}He,d),^{156}Dy(α,t)   **1977Pa23** (continued)

^{157}Ho Levels (continued)

E(level)†‡	Comments
1238	
1252$^{\&}$	
1277	J^π: Assignment in Adopted Levels is (17/2$^+$).
1292	
1345	
1362	
1380	
1401	
1430	
1442^a	
1456	
1484	
1508	
1518^a	
1532	
1548$^{\&}$	
1602^a	
1627$^{\&}$	
1634^a	
1658$^{\&}$	
1690	
1707$^{\&}$	
1739$^{\&}$	
1758	
1816$^{\&}$	

† Average of values from (^{3}He,d) and (α,t) reactions. Uncertainties are 2 keV for strongly populated levels from a general statement.

‡ Level is seen in both reactions, unless otherwise noted.

$^{\#}$ As deduced by authors from measured L values and comparison of the measured cross sections with those calculated for the rotational-band members based on the Nilsson orbitals, including pairing and Coriolis mixing. Assignments in the Adopted Levels that are significantly different are noted.

$^{@}$ Values are from figures of the authors (1977Pa23).

$^{\&}$ Not observed in (α,t) reaction.

^{a} Not observed in (^{3}He,d) reaction.

^{b} Authors indicate this level could include the 1/2$^+$ and 3/2$^+$ members of the 1/2[411] band. In the ^{157}Er ε decay, 1978BrYV assign the first three members of this band to levels at 174, 177, and 270 keV. Neither assignment is adopted.

^{c} Cross section ratio indicates L=4, but J^π assignment requires L=3.

^{d} Band(A): 7/2[523] band.

^{e} Band(B): 5/2[402] bandhead .

^{f} Band(C): 7/2[404] bandhead.

^{g} Band(D): 1/2[411] bandhead.

^{h} Band(E): 1/2[541] band.

^{i} Band(F): K^π=1/2$^+$ γ-vibrational based on the 5/2[402] state with admixture of 1/2[400] state.

^{j} Band(G): 9/2[514] band member.

^{156}Dy(^{3}He,d),^{156}Dy(α,t)   **1977Pa23**

Band(E): 1/2[541] band

7/2^{-} 729

**Band(F): K^{π}=1/2^{+}
γ-vibrational based on
the 5/2[402] state with
admixture of 1/2[400]
state**

9/2^{-} 652

3/2^{+} 638
1/2^{+} 628

3/2^{-} 570

Band(A): 7/2[523] band

5/2^{-} 525

15/2^{-} 503

1/2^{-} 481

**Band(D): 1/2[411]
bandhead**

(7/2)${}^{+}$ 374
(5/2)${}^{+}$ 356

(3/2)${}^{+}$ 272

11/2^{-} 188

**Band(C): 7/2[404]
bandhead**

**Band(B): 5/2[402]
bandhead**

7/2^{+} 66

5/2^{+} 53

7/2^{-} 0

${}^{157}_{67}$Ho$_{90}$

^{156}Dy(^{3}He,d),^{156}Dy(α,t)   **1977Pa23 (continued)**

**Band(G): 9/2[514] band
member**

11/2^{-} 996

$^{157}_{67}$Ho$_{90}$

^{156}Dy(^{3}He,d),^{156}Dy(α,t)   **1977Pa23 (continued)**