^{242}Pu(^{3}He,d),(α,t) 1970El07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja, E. A. Mccutchan	NDS 121, 695 (2014)	30-Sep-2013

1970El07: ^{242}Pu bombarded with 30 MeV ^{3}He and α-particle beams from the Emperor tandem Van de Graaff of the University of Rochester. The scattered deuterons and tritons were analyzed with an ENGE split-pole magnetic spectrograph and recorded on photographic plates. The data were taken at θ=60° for (^{3}He,d) and θ=45° for (α,t) reaction. The energy resolution for the (^{3}He,d) spectrum was 18 keV and 16 keV for the (α,t) spectrum.

^{243}Am Levels

Spin and Nilsson state assignments were made by 1970El07 from comparison of the experimental and theoretical spectroscopic factors. The (α,t)/(^{3}He,d) cross-section ratios were used to obtain information on the L-values (to an accuracy of ±1 unit).
See 1970El07 for calculations of spectroscopic factors for pure and for Coriolis mixed configurations.

E(level)[†]	J$^{\pi}$	Comments
0.0[‡]	5/2^{-}	
(42[‡])	7/2^{-}	
(84[#])	5/2^{+}	
97[‡] *2*	9/2^{-}	
(109[#])	7/2^{+}	
146[#] *3*	9/2^{+}	
(189[#])	11/2^{+}	
244[#] *2*	13/2^{+}	
266[@] *2*	3/2^{-}	
300[@] *2*	5/2^{-}	
345[@] *1*	7/2^{-}	
383 *2*		
423 *5*		
445 *3*		
466?[&] *5*	7/2^{+}	E(level): 465.7 *3* is adopted from ^{243}Pu β^{-} decay.
466[@] *5*	(11/2^{-})	
539[&] *5*	9/2^{+}	
586 *5*		
704[&] *2*	13/2^{+}	
724 *4*		
933 *4*		
977[a] *3*	(9/2^{-})	
1053 *3*		
1123 *3*		
1174 *3*		
1222 *3*		

[†] Average energy of (^{3}He,d) and (α,t) spectra.
[‡] Band(A): 5/2[523] band member. The 7/2^{-} member At 42 keV was not seen. From the measured and calculated spectroscopic factors, 1970El07 concluded that the interactions between the 5/2[523] band and the 3/2[521], 7/2[514] bands are weak.
[#] Band(B): 5/2[642] band member. The 5/2^{+}, 7/2^{+} and 11/2^{+} members At 84, 109 and 189 keV, respectively, were not observed. The measured and calculated spectroscopic factors indicate existence of strong Coriolis coupling between the 5/2[642] and 7/2[633] orbitals, and between the 5/2[642] orbital and the expected 9/2[624] orbital.
[@] Band(C): 3/2[521] band member.

Continued on next page (footnotes at end of table)

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^{243}Am Levels (continued)

& Band(D): 7/2[633] band member.
a Band(E): 7/2[514] band member?

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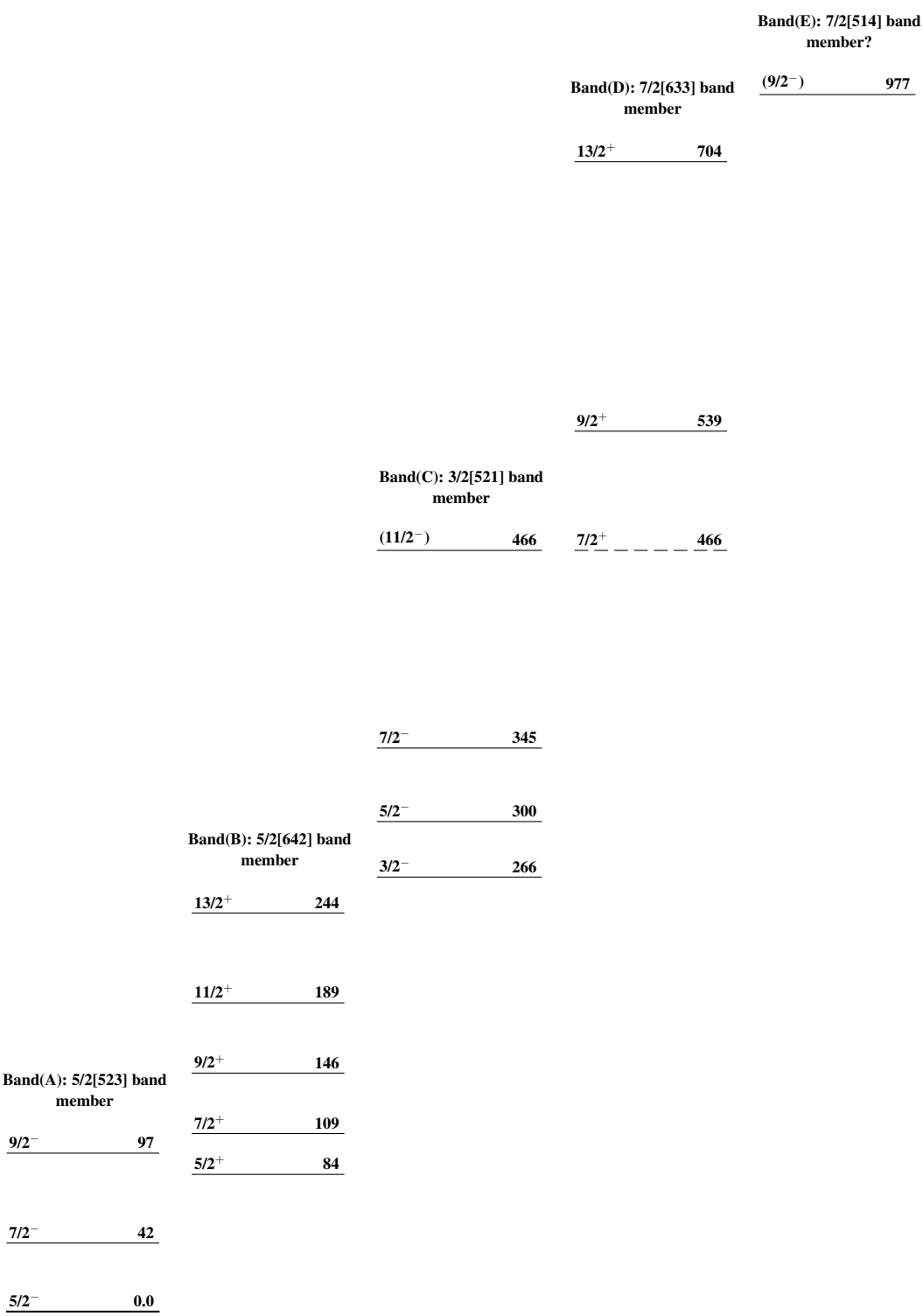

$^{243}_{95}Am_{148}$