^{238}U(^{3}He,α) 1970Vo03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 107, 2323 (2006)	15-Mar-2006

Target: ^{238}U, Projectile: ^{3}He, E=30 MeV. FWHM≈15 MeV.

Fission probability was measured by W. Schrieder (thesis, 1989, University of Bonn, Germany, as quoted in 1991Sc21) following ^{238}U(^{3}He,α) reaction.

^{237}U Levels

E(level)[†]	Jπ[‡]	L[#]	S[@]	Comments
5[&] *6*	1/2$^+$ & 3/2$^+$	0,1		The g.s. and the 11-keV level were not resolved.
82[&] *2*	7/2$^+$	4,5,6	0.19	
163[&] *2*	9/2$^+$	4,5	0.51	
205[&] *4*	11/2$^+$	3,4,5,6	0.10	
261[a] *1*	9/2$^+$	4,5	0.77	
327[a] *3*	11/2$^+$	4,5,6	0.33	Level probably is doublet and includes the 13/2$^+$,1/2[631] state (1970Vo03).
367[b] *3*	11/2$^-$		0.23	
432[b] *10*	13/2$^-$	4,5,6,7	(0.13)	
432[a] *10*	(13/2$^+$)		(0.16)	E(level): 409.8 keV in Adopted Levels from ^{238}U(^{207}Pb,^{208}Pbγ) (2005Zh20).
506[b] *1*	15/2$^-$	6,7	2.8	
551[c] *2*	(11/2$^+$)	6,7	0.39	
632[c] *3*	(13/2$^+$)	4,5,6	(0.17)	
688 *2*				
718 *6*		2,3,4,5		
798[d] *2*	9/2$^+$	4,5	1.0	
848[d] *1*	11/2$^+$	6,7	1.5	
870[e] *10*	1/2$^-$	0,1,2,3	1.1	
911[e] *4*	5/2$^-$	2,3,4	0.6	
946[f] *2*	9/2$^+$	4	0.75	
971 *2*		4,5		
1040[f] *1*	11/2$^+$	5,6	0.60	
1140[f] *3*	(13/2$^+$)	4,5,(6)	(0.45)	
1188 *4*				
1259[g] *2*	15/2$^-$	7	0.58	The observed spectroscopic factor is about 1/3 of the calculated one. The assignment to the 5/2[752] band was based on, in addition to the deduced L value, an analogy to the levels known in ^{235}U; the energy difference observed in ^{235}U between the 15/2, 5/2[752] state and the 7/2[743] band yielded an expected energy of 1200 keV for the 15/2, 5/2[752] state (1970Vo03).
1299 *3*		5,6,7		
1531 *2*		6,7		
1561 *3*		4,5,6		
1605 *3*		4,5,6		
1849 *2*		5,6,(7)		One of the levels populated at 1531, 1849 and 1888 keV may possibly be the 15/2$^-$,3/2[761] state; this assignment to the 1849-keV level was tentatively made in order to perform Coriolis calculations between the 7/2[743], the 5/2[752] and the 3/2[761] bands (1970Vo03). S=2.0 if Jπ=15/2$^-$.
1888 *2*		5,6		May possibly be the 13/2$^+$, 13/2[606] or 13/2$^+$, 13/2[615] state (1970Vo03). See also the comment for the 1849-keV level. S=1.4 if Jπ=13/2$^+$.

[†] From 1970Vo03.

Continued on next page (footnotes at end of table)

^{238}U(^{3}He,α) 1970Vo03 (continued)

^{237}U Levels (continued)

‡ Spin and Nilsson assignments were made from deduced L values and from comparison of spectroscopic factors with predicted values (1970Vo03).
# Possible L values deduced from cross sections measured at θ=20°, 35°, 35° and 90° (1970Vo03).
@ dσ/dΩ(exp)/N(dσ/dΩ(DWBA)), where the normalization factor N was taken to be 25. See 1970Vo03 for theoretical spectroscopic factors.
& 1/2[631] band.
a 5/2[622] band.
b 7/2[743] band.
c 7/2[624] band?
d 3/2[631] band.
e 1/2[501] band.
f 5/2[633] band.
g 5/2[752] band.