

¹⁷⁶Yb(³¹P,X γ) 2005Po03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. M. Symochko, E. Browne, J. K. Tuli		NDS 110,2945 (2009)	1-Dec-2008

Additional information 1.

¹¹⁹Sb isotope is formed as fission fragment after fusion reaction.

E=152 MeV. Measured E γ , I γ , $\gamma\gamma$ with the EUROBALL IV spectrometer which consisted of 15 Cluster Ge detectors placed in the backward hemisphere with respect to the beam, 26 Clover Ge detectors located around 90°, and 30 tapered single-crystal Ge detectors located at forward angles. Each Cluster detector consisted of seven closely packed large-volume Ge crystals and each Clover detector consisted of four smaller Ge crystals. The detector array also was composed of an inner ball of 210 BGO crystals. All data taken from figure 1 of 2005Po03; no tabular data provided by the authors.

¹¹⁹Sb Levels

E(level) [‡]	J ^π [†]	T _{1/2}	Comments
0.0	5/2 ⁺		
270.1 8	7/2 ⁺		Configuration= $\pi d_{5/2} \otimes 2^+$.
970.2# 8	9/2 ⁺		
1212.7 10	9/2 ⁺		
1340.3@ 11	11/2 ⁺		
1366.4& 12	11/2 ⁻		Configuration= $(\pi d_{5/2} \otimes 3^-) \otimes (\pi h_{11/2})$.
1675.4# 11	13/2 ⁺		
2037.4@ 12	15/2 ⁺		
2314.1& 13	15/2 ⁻		
2419.5# 12	17/2 ⁺		
2553.8& 13	19/2 ⁻	134 ns 6	T _{1/2} : From (HI,xn γ) in 1987Lu06.
2841.8 17	25/2 ⁺	0.85 s 9	T _{1/2} : From (HI,XNG) in 1979Sh03.

[†] Spin assignments to excited states are based upon the following: i) the already known spins of some states, ii) the assumption that in Yrast decays, spin values increase with the excitation energy, iii) the analogy with the level structures of the lighter isotopes, iv) the possible existence of crossover transitions.

[‡] Deduced by evaluators from least-squares fit to γ -ray energies; $\Delta E_\gamma=1$ keV assumed for each transition.

Band(A): 9/2⁺ band, $\alpha=+1/2$.

@ Band(a): 9/2⁺ band, $\alpha=-1/2$.

& Band(B): γ -ray cascade based on 11/2⁻.

$\gamma(^{119}\text{Sb})$

E γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult.	Comments
134	2553.8	19/2 ⁻	2419.5	17/2 ⁺		
154	1366.4	11/2 ⁻	1212.7	9/2 ⁺		
240	2553.8	19/2 ⁻	2314.1	15/2 ⁻		
270	270.1	7/2 ⁺	0.0	5/2 ⁺		
288	2841.8	25/2 ⁺	2553.8	19/2 ⁻	(E3)	Mult.: $\alpha(288\gamma)=0.16$ 3 from γ -ray transition intensity balance suggests M2 or E3 multiplicities. If the 288-keV γ ray de-excites the isomeric level at 2841.8 keV (T _{1/2} =0.85 s 9), then an E3 multipolarity would be consistent with that for a retarded transition.
335	1675.4	13/2 ⁺	1340.3	11/2 ⁺		
362	2037.4	15/2 ⁺	1675.4	13/2 ⁺		
370	1340.3	11/2 ⁺	970.2	9/2 ⁺		
382	2419.5	17/2 ⁺	2037.4	15/2 ⁺		

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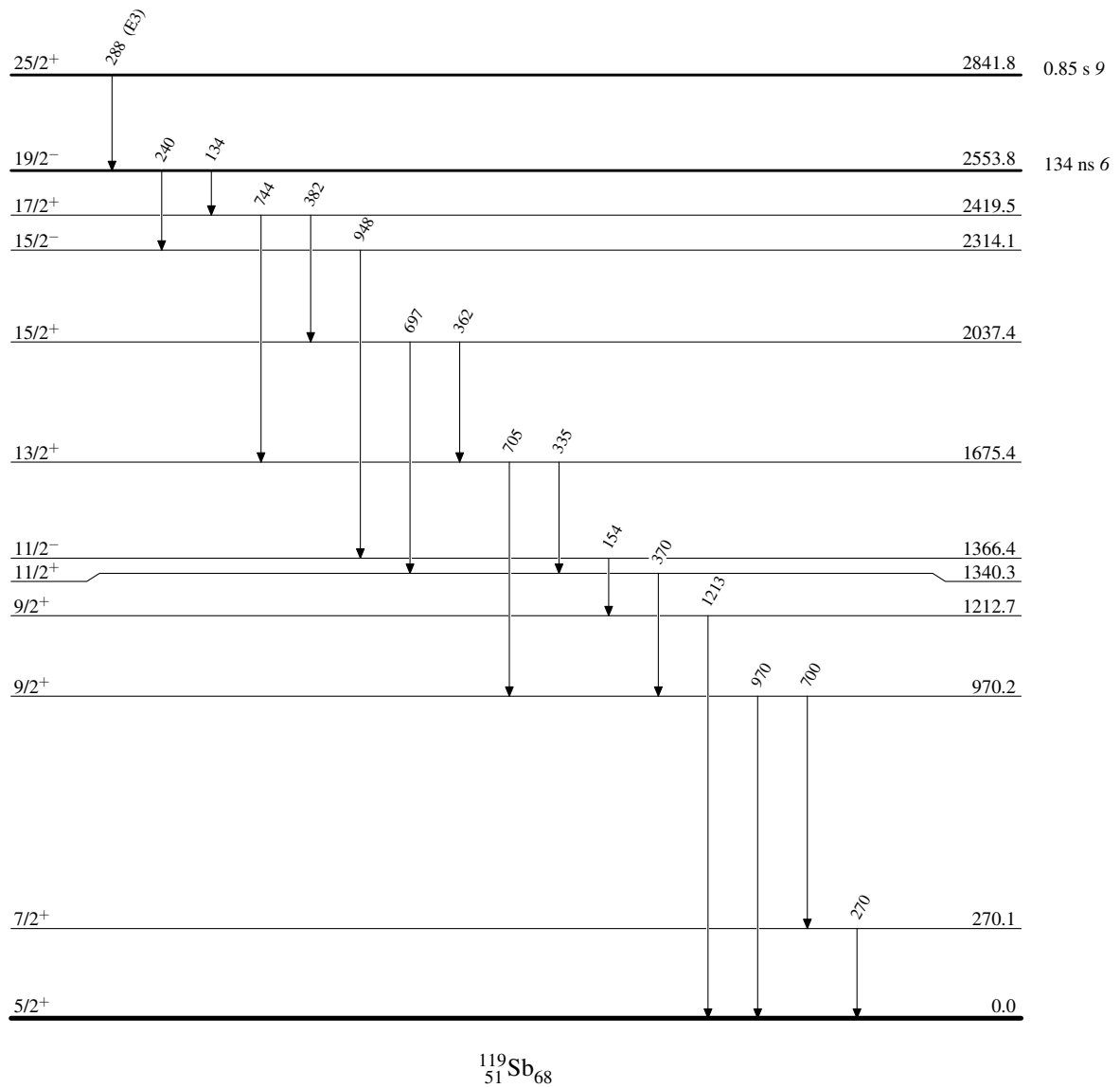
 $^{176}\text{Yb}(^{31}\text{P},\text{X}\gamma)$ **2005Po03 (continued)**

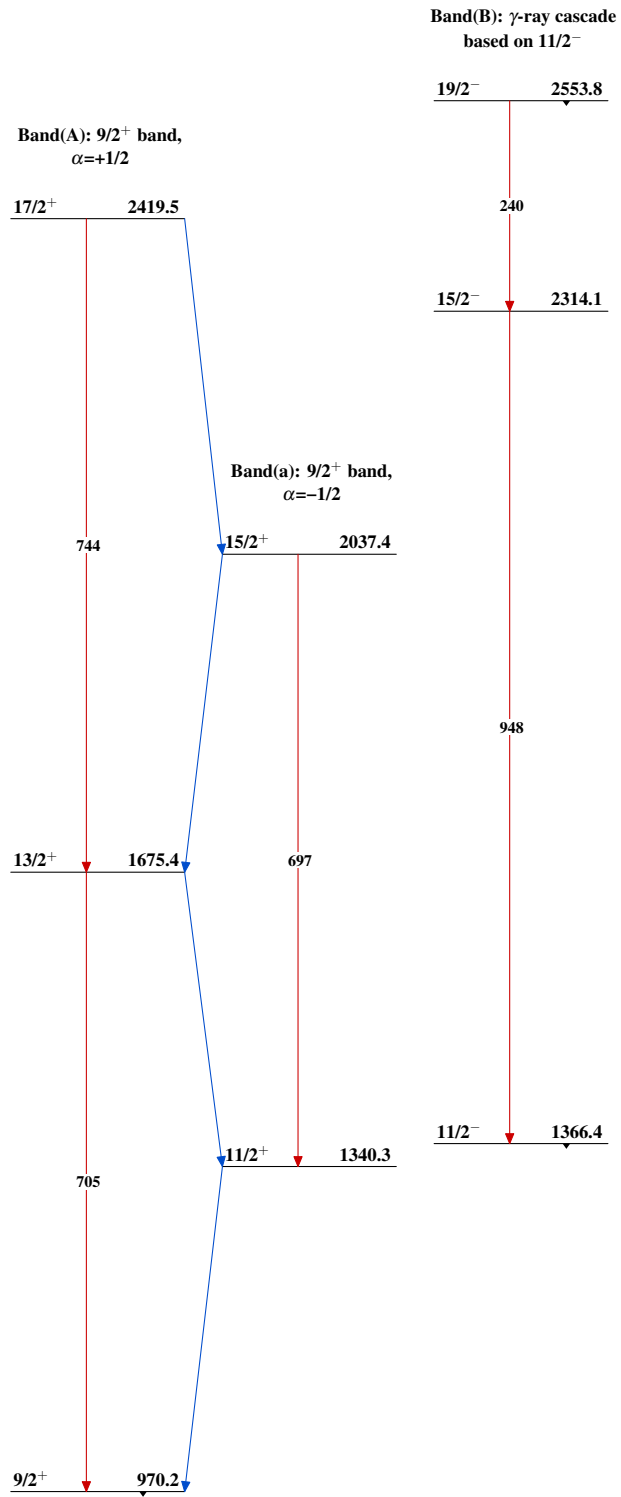
 $\gamma(^{119}\text{Sb})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π
697	2037.4	15/2 ⁺	1340.3	11/2 ⁺	948	2314.1	15/2 ⁻	1366.4	11/2 ⁻
700	970.2	9/2 ⁺	270.1	7/2 ⁺	970	970.2	9/2 ⁺	0.0	5/2 ⁺
705	1675.4	13/2 ⁺	970.2	9/2 ⁺	1213	1212.7	9/2 ⁺	0.0	5/2 ⁺
744	2419.5	17/2 ⁺	1675.4	13/2 ⁺					

$^{176}\text{Yb}(^{31}\text{P},\text{X}\gamma)$ 2005Po03

Level Scheme



$^{176}\text{Yb}(^{31}\text{P},\text{X}\gamma)$ 2005Po03 $^{119}_{51}\text{Sb}_{68}$