^{120}Sn(^{7}Li,α2nγ) 2009Wa02,1985Pi02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. Ohya	NDS 111, 1619 (2010)	20-Jan-2009

Includes Yb,Lu,W,Os(^{136}Xe,X) E=6.0-6.2 MeV/nucleon.

2009WA02: Two experiments performed. First experiment: ^{120}Sn(^{7}Li,α2n) E=58 MeV, measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma$(q), ce using CAESAR array composed of six Ge detectors with Compton suppression and two LEPS detectors. Conversion electrons measured using a Si(Li) detector. Second experiment: ^{136}Xe beam incident on targets of Yb,Lu,W and Os, E=6.0-6.2 MeV/nucleon, measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma$(q) using GAMMASPHERE array of 100 HPGe detectors with Compton-suppression: Isomer lifetimes were measured using decay curve analyses and generalized centroid-shift method.

1985PI02: E(^{7}Li)=27 MeV; measured Eγ, $\gamma\gamma$, $\gamma(\theta)$.

^{121}Sb Levels

E(level)‡	J$^\pi$†	$T_{1/2}$#	Comments
0	$5/2^+$		
37.1 *2*	$7/2^+$		
947.0 *2*	$9/2^+$		
1035.4 *3*	$9/2^+$		
1139.1 *3*	$11/2^+$		J$^\pi$: $9/2^+$,$11/2^+$ in Adopted Levels.
1144.5 *2*	$9/2^+$		
1322.1 *3*	$11/2^+$		J$^\pi$: $(11/2^+)$ in Adopted Levels.
1426.7 *2*	$11/2^-$		J$^\pi$: $(11/2)^-$ in Adopted Levels.
1649.8 *3*	$13/2^+$		J$^\pi$: $(13/2^+)$ in Adopted Levels.
1998.0 *3*	$15/2^+$		J$^\pi$: $(15/2^+)$ in Adopted Levels.
2057.0 *3*	$13/2^+$		J$^\pi$: $(13/2^+)$ in Adopted Levels.
2139.0 *4*	$15/2^+$		J$^\pi$: $13/2^+$,$15/2^+$ in Adopted Levels.
2142.1 *3*	$15/2^-$	1.8 ns *2*	J$^\pi$: $(15/2)^-$ in Adopted Levels. $T_{1/2}$: centroid-shift method.
2356.8 *3*	$17/2^+$		J$^\pi$: $(17/2^+)$ in Adopted Levels.
2434.3 *4*	$19/2^-$	7.7 ns *2*	J$^\pi$: $(19/2)^-$ in Adopted Levels. $T_{1/2}$: from $\gamma\gamma$(t).
2543.1 *4*	17/2		
2551.1 *4*	$(19/2^-)$		J$^\pi$: $(21/2,19/2)^-$ in Adopted Levels.
2680.0 *3*	$19/2^+$		J$^\pi$: $(19/2^+)$ in Adopted Levels.
2720.9 *4*	$21/2^+$	1.9 ns *3*	J$^\pi$: $(21/2)^+$ in Adopted Levels. $T_{1/2}$: centroid-shift method.
2746 *15*	$(25/2^+)$	179 μs *6*	$T_{1/2}$: weighted average of decay curves for 169.8, 286.6 and 323.2 γ rays. E(level): from Eγ=10-40 keV (if E2) to 2720.9 level, based on Weisskopf estimate (2009Wa02). J$^\pi$: (25/2) in Adopted Levels.
2764.8 *4*	$19/2^+$		J$^\pi$: $(19/2^+)$ in Adopted Levels.
3183.4 *5*	$(21/2^+)$		J$^\pi$: (21/2,23/2) in Adopted Levels.

† Based on $\gamma\gamma(\theta)$, DCO ratios and α(K)exp, unless noted otherwise.

‡ From least-squares fit to Eγ's. The evaluator assumed an uncertainty of 0.3 keV for Eγ's.

From 2009Wa02.

^{120}Sn(^{7}Li,α2nγ) 2009Wa02,1985Pi02 (continued)

$\gamma(^{121}Sb)$

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[#]	Comments
37.1	7/2$^+$	37.1		0	5/2$^+$				
947.0	9/2$^+$	909.9		37.1	7/2$^+$	D			Mult.: from negative A_2 in $\gamma(\theta)$ (1985PI02).
		947.0		0	5/2$^+$				
1035.4	9/2$^+$	998.3		37.1	7/2$^+$				
1139.1	11/2$^+$	1102.0		37.1	7/2$^+$				
1144.5	9/2$^+$	1107.4		37.1	7/2$^+$				
		1144.5		0	5/2$^+$				
1322.1	11/2$^+$	375.1		947.0	9/2$^+$	D			Mult.: from negative A_2 in $\gamma(\theta)$ (1985PI02).
1426.7	11/2$^-$	282.2		1144.5	9/2$^+$				
		287.6		1139.1	11/2$^+$				
		391.3		1035.4	9/2$^+$	[E1]		0.00456 *7*	α=0.00456 *7*; α(K)=0.00396 *6*; α(L)=0.000481 *7*; α(M)=9.46×10^{-5} *14*; α(N+..)=1.99×10^{-5} *3* α(N)=1.82×10^{-5} *3*; α(O)=1.775×10^{-6} *25*
		1389.6		37.1	7/2$^+$	[M2]		0.00183 *3*	α=0.00183 *3*; α(K)=0.001573 *22*; α(L)=0.000194 *3*; α(M)=3.82×10^{-5} *6*; α(N+..)=2.13×10^{-5} *3* α(N)=7.39×10^{-6} *11*; α(O)=7.37×10^{-7} *11*; α(IPF)=1.314×10^{-5} *19*
1649.8	13/2$^+$	327.7		1322.1	11/2$^+$	D			Mult.: from negative A_2 in $\gamma(\theta)$ (1985PI02).
		702.8		947.0	9/2$^+$				
1998.0	15/2$^+$	348.2		1649.8	13/2$^+$	D			Mult.: from negative A_2 in $\gamma(\theta)$ (1985PI02).
		675.9		1322.1	11/2$^+$				
2057.0	13/2$^+$	912.5		1144.5	9/2$^+$				
		917.9		1139.1	11/2$^+$				
		1021.6		1035.4	9/2$^+$				
2139.0	15/2$^+$	999.9		1139.1	11/2$^+$	Q			Mult.: from DCO=0.95 8 gate on ΔJ=2, quadrupole.
2142.1	15/2$^-$	85.1	15.4 *11*	2057.0	13/2$^+$	[E1]		0.297	α(K)=0.256 *4*; α(L)=0.0333 *5*; α(M)=0.00653 *10*; α(N+..)=0.001346 *19* α(N)=0.001233 *18*; α(O)=0.0001133 *16*
		144.1	2.5 *6*	1998.0	15/2$^+$	[E1]		0.0673	α(K)=0.0583 *9*; α(L)=0.00731 *11*; α(M)=0.001436 *21*; α(N+..)=0.000299 *5* α(N)=0.000273 *4*; α(O)=2.59×10^{-5} *4*
		492.3	3.2 *5*	1649.8	13/2$^+$	[E1]		0.00261 *4*	α=0.00261 *4*; α(K)=0.00227 *4*; α(L)=0.000274 *4*; α(M)=5.38×10^{-5} *8*; α(N+..)=1.138×10^{-5} *16* α(N)=1.036×10^{-5} *15*; α(O)=1.017×10^{-6} *15*
		715.4	79 *4*	1426.7	11/2$^-$	E2+M3	+0.10 +*8*−*7*	0.0032 *5*	α=0.0032 *5*; α(K)=0.0028 *4*; α(L)=0.00036 *6*; α(M)=7.1×10^{-5}

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^{120}Sn(^{7}Li,α2nγ) 2009Wa02,1985Pi02 (continued)

$\gamma(^{121}Sb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[#]	Comments
									12; α(N+..)=1.50×10^{-5} *24* α(N)=1.37×10^{-5} *22*; α(O)=1.32×10^{-6} *22* δ: from (715γ)(391γ assumed E1)(θ): A_2=−0.107 *21*, A_4=+0.04 *3*.
2356.8	17/2$^+$	358.8		1998.0	15/2$^+$	(D)			Mult.: from $\gamma(\theta)$ (1985PI02).
		707.0		1649.8	13/2$^+$				
2434.3	19/2$^-$	77.5	4.5 *5*	2356.8	17/2$^+$	[E1]		0.387	α(K)=0.333 *5*; α(L)=0.0436 *7*; α(M)=0.00855 *12*; α(N+..)=0.001760 *25* α(N)=0.001613 *23*; α(O)=0.0001472 *21*
		292.2	96 *6*	2142.1	15/2$^-$	E2(+M3)	−0.03 *6*	0.041 *4*	α(K)=0.034 *4*; α(L)=0.0054 *6*; α(M)=0.00109 *13*; α(N+..)=0.00022 *3* α(N)=0.000206 *24*; α(O)=1.83×10^{-5} *23* Mult.,δ: from (292γ)(715γ assumed E2)(θ): A_2=+0.091 *27*, A_4=+0.05 *4*: α(K)exp=0.034 2 (2009Wa02).
2543.1	17/2	401.0		2142.1	15/2$^-$	D			Mult.: from DCO=1.6 *2* gate on ΔJ=2, quadrupole.
2551.1	(19/2$^-$)	116.8		2434.3	19/2$^-$	M1(+E2)	<0.2		α(K)=0.345 *5*; α(L)=0.0442 *7*; α(M)=0.00875 *13*; α(N+..)=0.00186 *3* α(N)=0.001689 *24*; α(O)=0.0001664 *24* Mult.,δ: Evaluator deduced from α(exp)=0.37 5 (2009Wa02). Authors′ value is M1.
2680.0	19/2$^+$	323.2		2356.8	17/2$^+$				
		541.0		2139.0	15/2$^+$				
		682.0		1998.0	15/2$^+$				
2720.9	21/2$^+$	40.9	11.0 *24*	2680.0	19/2$^+$	[M1]		8.21	α(K)=7.06 *10*; α(L)=0.922 *13*; α(M)=0.183 *3*; α(N+..)=0.0387 *6* α(N)=0.0352 *5*; α(O)=0.00345 *5*
		169.8	9.5 *5*	2551.1	(19/2$^-$)	E1		0.0425	α(K)=0.0368 *6*; α(L)=0.00459 *7*; α(M)=0.000901 *13*; α(N+..)=0.000188 *3* α(N)=0.0001719 *24*; α(O)=1.637×10^{-5} *23* Mult.: from α(K)exp=0.032 5 (2009Wa02).
		286.6	79.5 *23*	2434.3	19/2$^-$	E1+M2	−0.06 *4*	0.0107 *10*	α(K)=0.0093 *8*; α(L)=0.00115 *12*; α(M)=0.000226 *24*; α(N+..)=4.8×10^{-5} *5* α(N)=4.3×10^{-5} *5*; α(O)=4.2×10^{-6} *5* Mult.,δ: from (287γ)(292γ assumed E2)(θ)+(287γ)(715γ assumed E2)(θ): A_2=−0.108 *24*, A_4=+0.04 *4*: α(K)exp=0.013 2 (2009Wa02).

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^{120}Sn(^{7}Li,α2nγ) 2009Wa02,1985Pi02 (continued)

$\gamma(^{121}Sb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.	α[#]	Comments
2746	(25/2$^+$)	(<40)	100	2720.9	21/2$^+$	[E2]	>45.9	
2764.8	19/2$^+$	408.0		2356.8	17/2$^+$	D		Mult.: from DCO=0.93 *6* gate on ΔJ=1, dipole.
		766.8		1998.0	15/2$^+$			
3183.4	(21/2$^+$)	418.6		2764.8	19/2$^+$			

[†] From 2009Wa02.
[‡] Photon branching from each level (2009Wa02).
[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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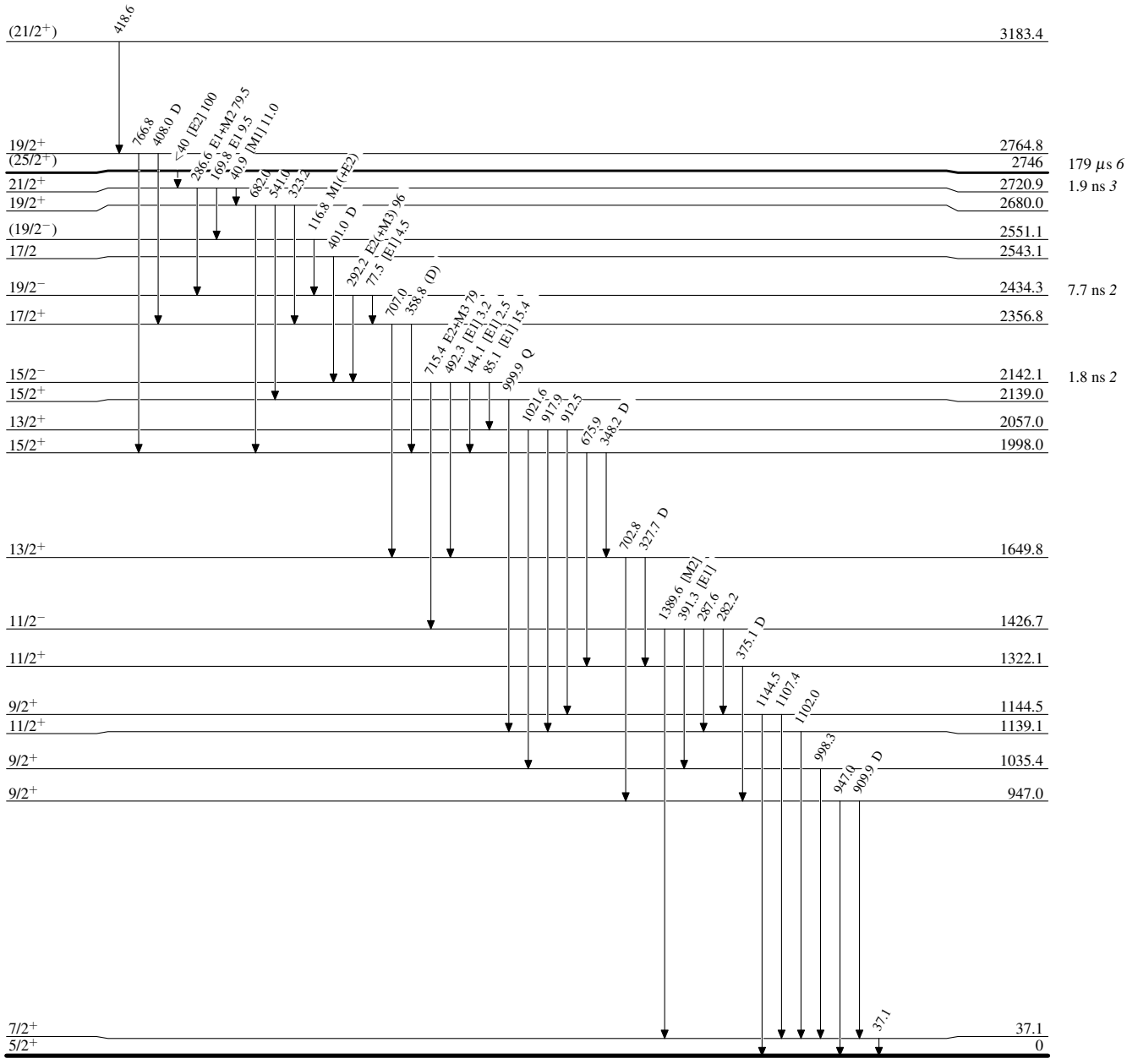
Legend

Level Scheme

Intensities: % photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{121}_{51}Sb_{70}$