^{122}Sn(n,γ) E=res 1977Ca09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 174, 1 (2021)	15-Apr-2021

1977Ca09: E=0.1-20 keV neutron beams were produced from the Oak Ridge Electron Linear Accelerator (ORELA) facility. Target was 90.80% enriched ^{122}Sn. γ rays were detected with a Ge(Li) detector. Measured Eγ, Iγ. Deduced levels.
Others: 1975Bh01 (E=7.724 MeV), 1974TiZT (E=14.7 MeV), 1972BhZZ (E=res), 1971ChYQ (E=res).

^{123}Sn Levels

E(level)[†]	Jπ[#]	Comments
0.0	11/2$^-$	
24.6	3/2$^+$	E(level): from Adopted Levels.
150.4[‡] *6*	1/2$^+$	
619.5 *5*	(9/2)$^-$	
869.6 *5*	(5/2)$^+$	
919.8[‡] *6*	(3/2)$^+$	
930.9 *10*	7/2$^-$	
1072.1[‡] *6*	(1/2,3/2)$^+$	
1135.9 *11*	(1/2,3/2,5/2)$^+$	
1194.4 *5*	(5/2)$^+$	
2155.5 *14*	(1/2,3/2,5/2)	
2615? *3*	(1/2$^+$)	
5945.9	3/2[@]	E_n(res)=0.106 keV. Jπ: From 1995Ca25; neutron capture state.
5946.1	1/2[@]	E_n(res)=0.258 keV.
5947.5		E_n(res)=1.737 keV.
5947.9		E_n(res)=2.073 keV.
5948.9		E_n(res)=3.138 keV.
5949.2		E_n(res)=3.425 keV.
5950.6		E_n(res)=4.799 keV.

[†] From a least-squares fit to γ-ray energies, except for resonant levels where E(level)=S(n)+E_n(res), with S(n)=5945.8 *15* from 1977Ca09. Adopted S(n)=5946.0 *12* in 2021Wa16.
[‡] Fed by primary γ from 258-eV resonance.
[#] From Adopted Levels, unless noted otherwise.
[@] From angular distribution measurements in 1975Bh01.

γ(^{123}Sn)

E_i(level)	J^π_i	E_γ[†]	I_γ[#]	E_f	J^π_f	Comments
150.4	1/2$^+$	125.76		24.6	3/2$^+$	E_γ: from Adopted Gammas, not seen in 1977Ca09.
619.5	(9/2)$^-$	619.5 *5*	100	0.0	11/2$^-$	
869.6	(5/2)$^+$	719.0 *10*	14	150.4	1/2$^+$	
		845.0 *5*	86	24.6	3/2$^+$	
919.8	(3/2)$^+$	769.3 *5*	25	150.4	1/2$^+$	
		895.8 *10*	75	24.6	3/2$^+$	
930.9	7/2$^-$	930.9 *10*	100	0.0	11/2$^-$	
1072.1	(1/2,3/2)$^+$	921.9 *5*	57	150.4	1/2$^+$	
		1046.8 *10*	43	24.6	3/2$^+$	
1135.9	(1/2,3/2,5/2)$^+$	985.3 *10*	100	150.4	1/2$^+$	
1194.4	(5/2)$^+$	1169.8 *5*	100	24.6	3/2$^+$	
2155.5	(1/2,3/2,5/2)	1019.5 *10*	100	1135.9	(1/2,3/2,5/2)$^+$	

Continued on next page (footnotes at end of table)

^{122}Sn(n,γ) E=res 1977Ca09 (continued)

γ(^{123}Sn) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[#]	E_f	J_f^π	Comments
5945.9	3/2	3331[‡] *3*	0.05[@] *1*	2615?	$(1/2^+)$	
		3789.1[‡] *25*	0.14[@] *2*	2155.5	(1/2,3/2,5/2)	
		4750.8[‡] *25*		1194.4	$(5/2)^+$	E_γ: not seen from this resonance.
		4874.2[‡] *25*		1072.1	$(1/2,3/2)^+$	
		5025.7[‡] *25*	0.20[@] *2*	919.8	$(3/2)^+$	
		5076.2[‡] *15*	0.20[@] *2*	869.6	$(5/2)^+$	
		5795.5[‡] *15*	1.42[@] *4*	150.4	$1/2^+$	
		5921.0[‡] *15*	0.49[@] *2*	24.6	$3/2^+$	
5946.1	1/2	3331		2615?	$(1/2^+)$	
		4873.9	0.14[@] *2*	1072.1	$(1/2,3/2)^+$	
		5026.2	0.34[@] *3*	919.8	$(3/2)^+$	
		5076.4		869.6	$(5/2)^+$	
		5795.6	1.10[@] *4*	150.4	$1/2^+$	
5947.5		5077.8		869.6	$(5/2)^+$	
		5922.7		24.6	$3/2^+$	
5947.9		5923.1	0.87[@] *1*	24.6	$3/2^+$	
5948.9		5924.1	0.84[@] *6*	24.6	$3/2^+$	
5949.2		5079.5	0.37[@] *4*	869.6	$(5/2)^+$	
		5798.7	0.41[@] *2*	150.4	$1/2^+$	
		5924.4		24.6	$3/2^+$	
5950.6		4756.1	0.22[@] *6*	1194.4	$(5/2)^+$	
		5925.8	0.61[@] *9*	24.6	$3/2^+$	

[†] From 1977Ca09, unless otherwise noted. Values without uncertainties are from level-energy differences. Note that no energies are explicitly given for primary γ rays from each resonance state by the authors, instead, γ-ray energies corresponding to thermal neutron separation are quoted for primary γ from each resonance state.

[‡] γ-ray energies corresponding to thermal neutron separation (1977Ca09).

[#] Quoted values are %photon branching from each level from 1977Ca09, unless otherwise noted.

[@] Relative intensities at 90°, normalized to 100 for the sum of Ge(Li) detector counts between 2.5 to 2.5 MeV from 1977Ca09 at each resonance energy.

[x] γ ray not placed in level scheme.

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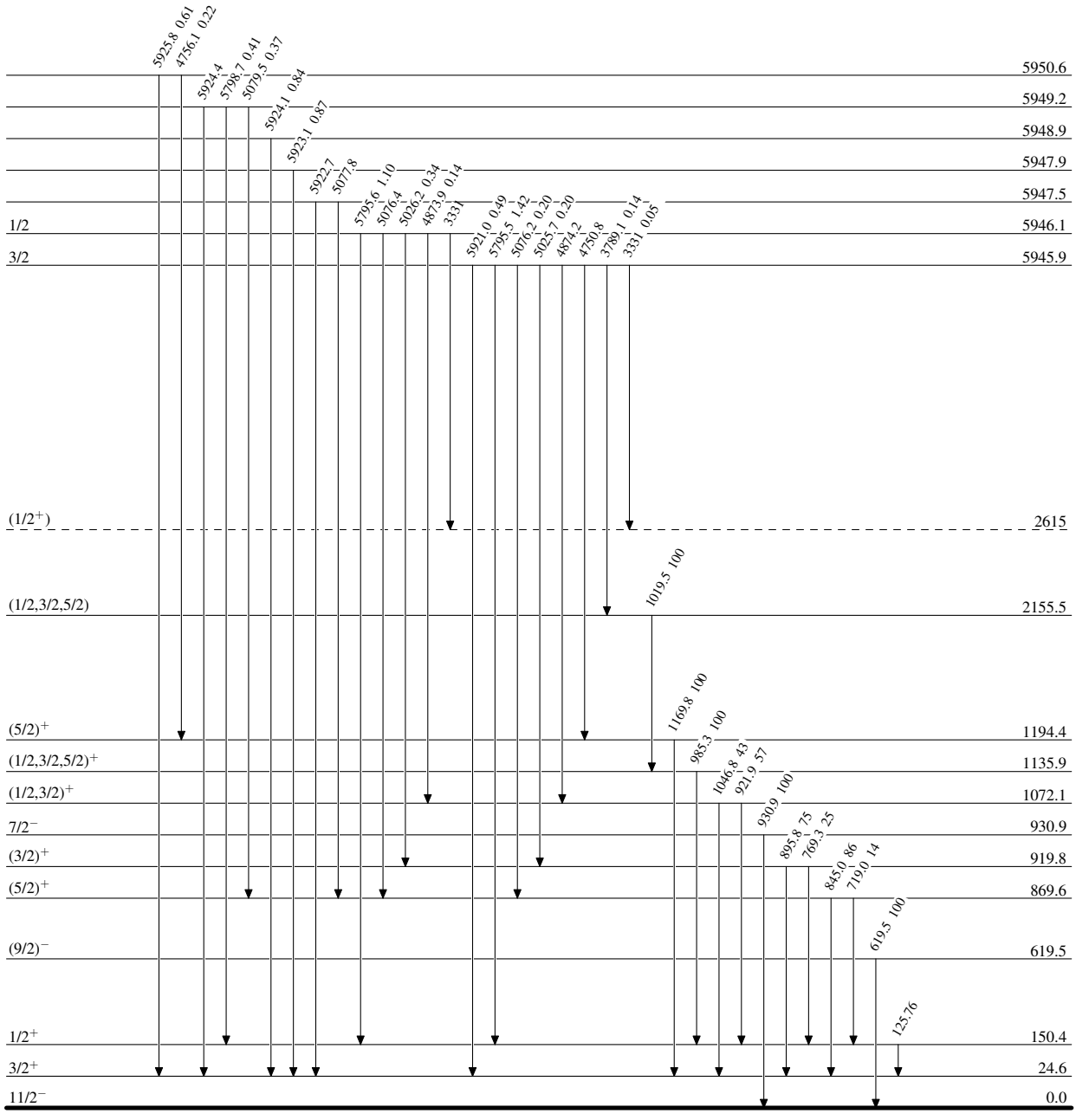
Level Scheme

Intensities: Relative photon branching from each level



$^{123}_{50}Sn_{73}$