

$^{124}\text{Sn}(n,\gamma)$ E=0.05-11.5 keV [1977Ca09](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	J. Katakura	NDS 112, 495 (2011)	1-Jan-2010

[1977Ca09](#): E=0.05-11.5 keV, TOF, enriched target 93.28%, semi γ . Measured: Primary γ 's from five resonance states at 62, 2378, 3393, 5437, and 10180 eV; secondary γ 's.

[2007Eg02](#): E=thermal, in-beam γ -spectroscopy, measure absolute intensity and cross section.

[1981Ba53](#): E=thermal, enriched target 96.6%, semi γ ; but only level energies are reported. See also: [1979BaYJ](#), [1980BaZA](#).

Others: [1996Ca40](#): total neutron cross section is measured over the energy range 0.014-0.315 MeV, and many resonance levels are reported with J^π values. [1993Sh04](#): nuclear matter compressibility from isoscalar giant monopole resonance.

 ^{125}Sn Levels

According to [1981Ba53](#), following 7 levels are reported as new levels: 1926.2 9, 2297 1, 2540.2 8, 3359.7 1.5, 3464 1, 4009.11 9, and 4575 1 keV.

E(level) [†]	J^π @	$T_{1/2}$ @	Comments
0.0	11/2 ⁻	9.64 d 3	
27.50 [#] 14	3/2 ⁺	9.52 min 5	Additional information 1.
215.13 [#] 3	1/2 ⁺		
854.5 10	7/2 ⁺		
929.6 [#] 5	1/2,3/2		
936.9 10	(7/2) ⁻		
1071.6 [#] 4	1/2,3/2		
1186.8 9	1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺		
1258.5 5	(5/2) ⁺		
1757.0 [#] 10	1/2,3/2		
1874.9 [#] 11			
2249.5 [#] 9			
2284.2 [#] 10			
2331.1 [#] 16			
2346.8 [#] 11			
2532.2 [#] 16			
(5732.2 [‡] 15)			

[†] From a least-squares fit to $E\gamma$'s (evaluators) except for the 27.50 and 215.13 levels which are from Adopted Levels.

[‡] Neutron-separation energy from a least-squares fit to $E\gamma$'s by the evaluators. Other: 5733.1 6 ([1981Ba53](#)).

[#] Populated with primary γ from spin 1/2⁻ resonance at 62 eV.

@ From Adopted Levels.

 $\gamma(^{125}\text{Sn})$ Primary γ 's and relative intensities ([1977Ca09](#))

$E\gamma$ (keV)	neutron resonance energy (eV)				
	62(1/2 ⁻)*	2378	3393	5437	10180
relative photon intensities at 90°					
5706.3 20	38.0 20	20.0 17			9.9 17
5518.6 20	18.0 10	5.0 12			7.5 21
4803.4 25	5.3 3	6.7 11			
4660 3	2.0 2				
4474 3			5.7 13		
3976 3	1.5 1		6.0 8		**
3857 3	**	2.5 7	3.4 7		

3483 3 0.80 5
 3447 3 0.40 6
 3400 4 0.18 3
 3384 3 0.53 5
 3204 3 0.18 4

* J is from 1968Bh01

** γ ray observed very weekly

Primary γ 's and relative intensity (1979BaYJ)

E_γ (keV)	I_γ	E_γ (keV)	I_γ	E_γ (keV)	I_γ
5705.6 5	0.44 2	3600		2400.1 3	3.0 2
3994.5 3	4.9 4	3505.9 5	0.40 6	2373.4 9	1.1 2
3980.0 3	4.8 3	3436.1 7	0.35 4	2326.4 2	8.2 3
3876 1	0.2 1	3382.4 4	1.23 9	2269.3 5	1.3 1
3846 2	0.10 3	3307.7 2	1.33 6	1724.0 3	3.3 2
3832.1 4	0.44 5	3261 2	0.28 8	1158.2 8	2.5 8
3806.9 3	1.04 6	3221.7 6	0.311 5	1130.1 2	7.2 3
3793.0 3	0.92 6	3192.9 2	7.0 2		
3675		3119.8 4	1.1 1		

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\#$	E_f	J_f^π	Comments
215.13	1/2 ⁺	(187.63 [‡] 3)	100	27.50	3/2 ⁺	I $_\gamma$: Absolute intensity for thermal neutron capture (E=0.028 2 eV) is reported to be 43.8 +17-18 %. (2007Eg02).
854.5	7/2 ⁺	827.0 10	100	27.50	3/2 ⁺	
929.6	1/2,3/2	714.5 10	22	215.13	1/2 ⁺	
		902.1 5	78	27.50	3/2 ⁺	
936.9	(7/2) ⁻	936.9 10	100	0.0	11/2 ⁻	
1071.6	1/2,3/2	856.9 5	50	215.13	1/2 ⁺	
		1043.6 ^{&} 5	50 ^{&}	27.50	3/2 ⁺	
1186.8	1/2 ⁺ , 3/2 ⁺ , 5/2 ⁺	971.5 10	35 [@]	215.13	1/2 ⁺	
		1159.6 15	65 [@]	27.50	3/2 ⁺	
1258.5	(5/2) ⁺	1043.6 ^{&} 5	23 ^{&}	215.13	1/2 ⁺	
		1230.0 10	77	27.50	3/2 ⁺	
1757.0	1/2,3/2	1541.9 10	100	215.13	1/2 ⁺	
1874.9		616.4 10	100	1258.5	(5/2) ⁺	
2249.5		2034.5 10	83	215.13	1/2 ⁺	
		2221.5 15	17	27.50	3/2 ⁺	
2284.2		2256.7 10	100	27.50	3/2 ⁺	
2331.1		1259.5 15	100	1071.6	1/2,3/2	
2346.8		1275.2 10	100	1071.6	1/2,3/2	
2532.2		1460.6 15	100	1071.6	1/2,3/2	

[†] From 1977Ca09.

[‡] Not observed in $^{124}\text{Sn}(n,\gamma)$. Energy from 12.2-s ^{125}In β^- decay.

[#] Branching from each level.

[@] γ branching is estimated by the evaluators from γ spectrum.

[&] Multiply placed with intensity suitably divided.

^x γ ray not placed in level scheme.

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Legend

Level Scheme

Intensities: % photon branching from each level

@ Multiplied: intensity suitably divided

-----► γ Decay (Uncertain)