^{123}In β^- decay (6.15 s) 1976Fo02

Type	Author	History Citation	Literature Cutoff Date
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Parent: ^{123}In: E=0.0; $J^\pi=9/2^+$; $T_{1/2}$=6.15 s *27*; Q(β^-)=4386 *20*; %β^- decay=100.0

^{123}In-J^π,$T_{1/2}$: From Adopted Levels of ^{123}In. Adopted $T_{1/2}$ is unweighted average of 5.98 s *6* (1974Gr29), 6.68 s *20* (1986Go10), and 5.8 s *2* (2011Hi15), from this study.

^{123}In-Q(β^-): From 2021Wa16.

The decay scheme is that proposed by 1976Fo02.

1976Fo02: ^{123}In source was produced as isotope separated fission products from the OSIRIS and PINGIS facilities. γ rays were detected with Ge(Li) and NaI(Tl) detectors and electrons were detected with a cooled Si(Li) detector and a scintillator. Measured Eγ, Iγ, Eβ, Iβ, E(ce), I(ce), $\gamma\gamma$-coin, $\beta\gamma$(t). Deduced levels, J, π, $T_{1/2}$, β-decay branching ratios, log *ft*, conversion coefficients, γ-ray multipolarities. Systematics of neighboring tin isotopes.

1986Go10: ^{123}In source was produced as mass separated fission products at the OSIRIS ISOL facility at Studsvik. γ rays were detected with HPGe detectors and β particles were detected with a planar β detector. Measured Eγ, Iγ, Eβ, Iβ, $\beta\gamma$-coin, $\beta\gamma$(t). Deduced parent $T_{1/2}$, absolute γ emission probability for 619γ.

Others: 2011Hi15, 1987Sp09, 1986Go10, 1974Gr29, 1973Ja05, 1960Yu01.

The decay scheme could be incomplete due to a large gap between the highest excited level and the Q-value.

^{123}Sn Levels

E(level)†	J^π‡	$T_{1/2}$‡	Comments
0.0	$11/2^-$	129.2 d *5*	
24.6 *4*	$3/2^+$	40.06 min *2*	
618.81 *24*	$(9/2)^-$		
870.2 *4*	$(5/2)^+$		
931.4 *5*	$7/2^-$		
1044.3 *4*	$(7/2)^+$	<0.1 ns	$T_{1/2}$: from (β)(1019.7γ)(t) (1976Fo02).
1155.0 *3*	$7/2^+$	<0.1 ns	$T_{1/2}$: from (β)(1130.5γ)(t) (1976Fo02).
2001.2 *3*	$(9/2)^+$		

† From a least-squares fit to γ-ray energies.

‡ From Adopted Levels, unless otherwise noted.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(2385 *20*)	2001.2	1.89 *15*	5.45 *5*	av Eβ=963 *11*
(3231 *20*)	1155.0	64 *4*	4.47 *4*	av Eβ=1357 *12*
(3342 *20*)	1044.3	32 *2*	4.83 *4*	av Eβ=1409 *12*
(3455 *20*)	931.4	0.18 *11*	7.1 *3*	av Eβ=1462 *12*
(3516# *20*)	870.2	0.80 *22*	6.5 *1*	av Eβ=1491 *12*
(3767 *20*)	618.81	0.42 *24*	7.0 *3*	av Eβ=1609 *12*

† From γ+ce intensity balance at each level.

‡ Absolute intensity per 100 decays.

Existence of this branch is questionable.

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$\gamma(^{123}Sn)$

Iγ normalization: Intensities from 1976Fo02 are for per 100 parent decays, obtained from I(γ+ce to g.s.+24.6 level)=100, by assuming no I(β^-) to g.s. and 24.6 level.

E_γ[‡]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
174.18 *6*	0.19 *3*	1044.3	(7/2)$^+$	870.2	(5/2)$^+$	[M1,E2]	0.17 *6*	α(K)=0.14 *4*; α(L)=0.024 *12*; α(M)=0.0048 *23* α(N)=0.0009 *4*; α(O)=5.8×10^{-5} *17*
[x]175.01 *8*	0.13 *3*							
223.5 *5*	0.12 *4*	1155.0	7/2$^+$	931.4	7/2$^-$	[E1]	0.0189	α(K)=0.0165 *3*; α(L)=0.00201 *3*; α(M)=0.000392 *6* α(N)=7.30×10^{-5} *12*; α(O)=5.93×10^{-6} *9*
284.7 *2*	0.17 *4*	1155.0	7/2$^+$	870.2	(5/2)$^+$	[M1,E2]	0.037 *5*	α(K)=0.032 *4*; α(L)=0.0045 *10*; α(M)=0.00089 *21* α(N)=0.00017 *4*; α(O)=1.27×10^{-5} *14*
425.4 *7*	0.17 *8*	1044.3	(7/2)$^+$	618.81	(9/2)$^-$	[E1]	0.00352	α(K)=0.00306 *5*; α(L)=0.000368 *6*; α(M)=7.16×10^{-5} *11* α(N)=1.342×10^{-5} *20*; α(O)=1.130×10^{-6} *17*
536.4 *3*	0.90 *8*	1155.0	7/2$^+$	618.81	(9/2)$^-$			
618.8 *3*	2.6 *2*	618.81	(9/2)$^-$	0.0	11/2$^-$	M1,E2	0.00411	α(K)=0.00354 *5*; α(L)=0.000462 *7*; α(M)=9.06×10^{-5} *13* α(N)=1.690×10^{-5} *24*; α(O)=1.375×10^{-6} *20* Iγ: other: 2.8 *3* (1986Go10).
845.5 *2*	1.3 *2*	870.2	(5/2)$^+$	24.6	3/2$^+$			α(K)=0.00163; α(L)=0.00020
931.2 *8*	0.3 *1*	931.4	7/2$^-$	0.0	11/2$^-$	E2	1.51×10^{-3}	α(K)=0.001310 *19*; α(L)=0.0001620 *23*; α(M)=3.17×10^{-5} *5* α(N)=5.94×10^{-6} *9*; α(O)=5.04×10^{-7} *8*
957.3 *5*	0.4 *1*	2001.2	(9/2)$^+$	1044.3	(7/2)$^+$			
1019.7 *2*	32 *2*	1044.3	(7/2)$^+$	24.6	3/2$^+$	(E2)	1.23×10^{-3}	α(K)=0.001070 *15*; α(L)=0.0001312 *19*; α(M)=2.56×10^{-5} *4* α(N)=4.81×10^{-6} *7*; α(O)=4.11×10^{-7} *6* Mult.: M1,E2 from α(K)exp=0.0021 *11* (1976Fo02).
1130.5 *2*	63 *4*	1155.0	7/2$^+$	24.6	3/2$^+$	E2	0.000987 *14*	α=0.000987 *14*; α(K)=0.000857 *12*; α(L)=0.0001041 *15*; α(M)=2.03×10^{-5} *3* α(N)=3.82×10^{-6} *6*; α(O)=3.28×10^{-7} *5*; α(IPF)=1.320×10^{-6} *21* Eγ: other: 1130.5 *5* (1973Ja05). Mult.: M1,E2 from

Continued on next page (footnotes at end of table)

^{123}In β^- decay (6.15 s) 1976Fo02 (continued)

$\gamma(^{123}Sn)$ (continued)

E_γ ‡	I_γ ‡@	E_i(level)	J_i^π	E_f	J_f^π	Comments
						α(K)exp=0.0011 *4* (1976Fo02).
1131 *2*	≤0.2	2001.2	$(9/2)^+$	870.2	$(5/2)^+$	E_γ,I_γ: From $\gamma\gamma$-coincidence.
1155.2 *8*	0.04 *2*	1155.0	$7/2^+$	0.0	$11/2^-$	
1382.3 *2*	1.12 *7*	2001.2	$(9/2)^+$	618.81	$(9/2)^-$	
2001.2 *4*	0.27 *6*	2001.2	$(9/2)^+$	0.0	$11/2^-$	

† Additional information 1.
‡ From 1976Fo02, unless otherwise noted. Intensity values from 1976Fo02 and 1986Go10 are absolute intensities per 100 decays.
# From Adopted Gammas. Supporting evidence from this study is given under comments if available.
@ Absolute intensity per 100 decays.
x γ ray not placed in level scheme.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays