^{116}In β^- decay (54.29 min) 2006Kr04

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 717 (2010)	1-Dec-2009

Parent: ^{116}In: E=127.267 *6*; $J^\pi=5^+$; $T_{1/2}$=54.29 min *17*; Q(β^-)=3278 *4*; %β^- decay=100.0

2006Kr04: Measured Eγ, Iγ using a high purity Ge detector, Decay scheme based on earlier works.

1970Ra41, 1974Ar13: Measured γ(semi), β, $\gamma\gamma$, $\gamma\gamma(\theta)$, Ce(s) Others: 1974HeYW, 1975Ya08, 1995Wu09, 1950Sl87, 1965Ve05, 1967Fe03, 1972Pl03, 1960St13, 1974Ch59, 1975Ca10, 1974Ch59, 1956Sc19, 1962Cr03, 1974Ga05, 1975Ya08.

(α(K)exp=ce(K)(1972Pl03)/Iγ(1970Ra41), normalized to α(K)=(1293γ,E2)=0.00065).

^{116}Sn Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	0^+	stable	
1293.612 *12*	2^+		
1756.857 *18*	0^+	150 ps *50*	$T_{1/2}$: from 1977DeYX. This value is inconsistent with the adopted value of 45 ps *10*.
2112.290 *13*	2^+		
2225.428 *21*	2^+		
2266.243 *17*	3^-		
2366.02 *3*	5^-		
2390.921 *15*	4^+		
2529.205 *16*	4^+	<100 ps	J^π: from 1979Br07. $T_{1/2}$: from $\beta\gamma$(t) (1979Ka01).
2649.98 *23*	2^+		
2801.206 *17*	4^+		
3046.126 *17*	4^+		
3096.882 *24*	4^+		

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(308 *4*)	3096.882	0.24 *3*	5.81 *6*	av Eβ=87.5 *13*
(359 *4*)	3046.126	2.82 *4*	4.956 *18*	av Eβ=104.1 *14*
(604 *4*)	2801.206	10.3 *1*	5.164 *11*	av Eβ=190.4 *15* Eβ=600, Iβ=21% (1950Sl87), mag spect.
(876 *4*)	2529.205	32.5 *3*	5.241 *9*	av Eβ=295.6 *16* Eβ=870, Iβ=28% (1950Sl87), mag spect.
(1014 *4*)	2390.921	54.2 *6*	5.253 *8*	av Eβ=351.8 *17* Eβ=1000, Iβ=51% (1950Sl87), mag spect.

[†] Absolute intensity per 100 decays.

$\gamma(^{116}Sn)$

Iγ normalization: from Iγ(1293+1757+2112+2225γ)=100.

E_γ ‡	I_γ #&	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	α b	Comments
99.73 *4*	0.028 *3*	2366.02	5⁻	2266.243	3⁻	E2	1.611	α(K)=1.167 *17*; α(L)=0.357 *5*; α(M)=0.0728 *11*; α(N+..)=0.01345 *19* α(N)=0.01289 *19*; α(O)=0.000560 *8*
x116.5@ *10*	0.059 *24*							
124.65 *5*	0.012 *2*	2390.921	4⁺	2266.243	3⁻			
138.29 *2*	4.36 *10*	2529.205	4⁺	2390.921	4⁺	M1	0.228	α(K)exp=0.26 *3* (1972Pl03) α=0.228; α(K)=0.197; α(L)=0.0250; α(M)=0.00489; α(N+..)=0.00110 K/L: K/L measured. Iγ: From 2006Kr04 10% greater intensity than previous data.
x162.6 *5*	0.083 *24*							
163.40 *10*	0.018 *2*	2529.205	4⁺	2366.02	5⁻			
165.72 *10*	0.016 *2*	2390.921	4⁺	2225.428	2⁺			Iγ: Iγ from 1979Ka01.
x196.5@ *5*	0.059 *24*							
244.98 *5*	0.039 *3*	3046.126	4⁺	2801.206	4⁺			
263.03 *3*	0.148 *5*	2529.205	4⁺	2266.243	3⁻			
271.96 *4*	0.045 *4*	2801.206	4⁺	2529.205	4⁺			Eγ: Only given by 2006Kr04.
x272.4 *8*	0.094 *35*							
278.62 *2*	0.153 *4*	2390.921	4⁺	2112.290	2⁺			
303.73 *4*	0.142 *7*	2529.205	4⁺	2225.428	2⁺			
x345.2@ *8*	0.035 *12*							
355.40 *2*	0.861 *10*	2112.290	2⁺	1756.857	0⁺	E2	0.0206	α(K)exp=0.018 *4* (1972Pl03) α=0.0206; α(K)=0.0174; α(L)=0.00255; α(M)=0.00050; α(N+..)=0.00011
395.64 *16*	0.0080 *25*	3046.126	4⁺	2649.98	2⁺			Eγ: Only given by 2006Kr04.
410.23 *4*	0.071 *3*	2801.206	4⁺	2390.921	4⁺			Eγ: Only given by 2006Kr04.
416.90 *2*	32.1 *3*	2529.205	4⁺	2112.290	2⁺	E2	0.0126	α(K)exp=0.0096 *10* (1972Pl03) α=0.0126; α(K)=0.0107; α(L)=0.00150; α(M)=0.00030 Iγ: Iγ from 1974Ra13. Iγ=38.1 *18* (1970Ra41). This value is inconsistent with intensity balance. Eγ: other: 416.99 *7* (1975Re14).
435.18 *6*	0.027 *3*	2801.206	4⁺	2366.02	5⁻			
x458.5@ *5*	0.083 *24*							
463.21 *2*	0.855 *10*	1756.857	0⁺	1293.612	2⁺			Iγ: (ce(K) 1757γ)/Iγ(463γ)=0.0031 *3*$ other: 0.0026 *5* (1975Ya08).
x474.9@ *8*	0.020 *10*							
x500.1@ *8*	0.035 *12*							
517.23 *10*	0.015 *2*	3046.126	4⁺	2529.205	4⁺			Eγ: Only given by 2006Kr04.
535.03 *5*	0.040 *3*	2801.206	4⁺	2266.243	3⁻			
567.55 *6*	0.064 *5*	3096.882	4⁺	2529.205	4⁺			
x639.1@ *10*	0.035 *12*							
655.17 *2*	0.145 *3*	3046.126	4⁺	2390.921	4⁺			

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$\gamma(^{116}Sn)$ (continued)

E_γ ‡	I_γ #&	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	δ	α b	$I_{(\gamma+ce)}$ a	Comments
679.85 *8*	0.024 *4*	3046.126	4^+	2366.02	5^-					E_γ: Only given by 2006Kr04.
688.93 *2*	0.196 *4*	2801.206	4^+	2112.290	2^+					
705.97 *2*	0.189 *3*	3096.882	4^+	2390.921	4^+					
730.7 *3*	0.08 *3*	3096.882	4^+	2366.02	5^-					E_γ: Not confirmed by 2006Kr04.
x736	<0.0035									
779.12 *22*	0.291 *5*	3046.126	4^+	2266.243	3^-					
818.68 *2*	14.3 *1*	2112.290	2^+	1293.612	2^+	M1+E2	−1.8 *2*	0.00216 *2*		α(K)exp=0.0026 *3* (1972Pl03) α=0.00216 *2*; α(K)=0.00186 *2*; α(L)=0.00023 δ: from 1974Ga05 $\gamma\gamma(\theta)$; others: 1956Sc19, 1964Bo20, 1975Ya08.
830.68 *10*	0.034 *6*	3096.882	4^+	2266.243	3^-					
931.83 *4*	0.106 *5*	2225.428	2^+	1293.612	2^+					
972.60 *2*	0.585 *6*	2266.243	3^-	1293.612	2^+					
1072.50 *20*	0.019 *6*	2366.02	5^-	1293.612	2^+	E3		0.00229		α=0.00229; α(K)=0.00195; α(L)=0.00026 Mult.: from adopted γ's.
1097.28 *2*	69.0 *7*	2390.921	4^+	1293.612	2^+	E2		0.00106		α(K)exp=0.00094 *5* (1972Pl03) α=0.00106; α(K)=0.00091; α(L)=0.00011
1235.49 *3*	0.006 *3*	2529.205	4^+	1293.612	2^+					E_γ: Only given by 2006Kr04.
x1254.1@ *10*	0.047 *23*									
1293.56 *2*	100 *1*	1293.612	2^+	0.0	0^+	E2		0.00075		α=0.00075; α(K)=0.00065
1356.36 *23*	0.0093 *13*	2649.98	2^+	1293.612	2^+					E_γ: Only given by 2006Kr04.
1507.59 *2*	11.7 *1*	2801.206	4^+	1293.612	2^+	E2		0.00048		α(K)exp=0.00046 *3* (1972Pl03) α=0.00048; α(K)=0.00048
x1536.3 *10*										
x1712.3 *10*										
1752.50 *2*	2.78 *3*	3046.126	4^+	1293.612	2^+	E2				α(K)exp=0.00038 *8* (1972Pl03)
1757.07 *21*		1756.857	0^+	0.0	0^+	E0			0.0034 *2*	
1803.43 *23*	0.0105 *20*	3096.882	4^+	1293.612	2^+					
2112.29 *2*	17.8 *2*	2112.290	2^+	0.0	0^+	(E2)				α(K)exp=0.00029 *4* (1972Pl03) Mult.: α(K)exp allow mult=M1 or E2.
2225.39 *3*	0.055 *2*	2225.428	2^+	0.0	0^+					
2265.69 *21*	0.0036 *6*	2266.243	3^-	0.0	0^+					E_γ: Only given by 2006Kr04.

† Based on $\gamma\gamma(\theta)$ and α(K)exp measurements.
‡ From 2006Kr04, except where noted otherwise, and for the unplaced γ's and for 1507γ which are reported only by 1974Ar13.
# From 2006Kr04.
@ Not confirmed by 2006Kr04.
& For absolute intensity per 100 decays, multiply by 0.848 *8*.
a Absolute intensity per 100 decays.
b Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies,

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^{116}In β^- decay (54.29 min) 2006Kr04 (continued)

$\gamma(^{116}Sn)$ (continued)

assigned multipolarities, and mixing ratios, unless otherwise specified.

[x] γ ray not placed in level scheme.

^{116}In β^- decay (54.29 min) 2006Kr04

Decay Scheme

Intensities: I_γ per 100 parent decays