^{116}I β^+ decay   1992ZiZW,1976Go02

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

Parent: ^{116}I: E=0.0; J$^\pi$=1$^+$; T$_{1/2}$=2.91 s *15*; Q(β^+)=7.78×10^3 *10*; %β^+ decay=100.0

The decay scheme is that proposed by 1992ZiZW. Evaluators consider it as preliminary.

Measured: γ(semi), β(scin), $\beta\gamma$.

Previous reports: 1969Sp07, 1973XeZY, 1974Ha10.

^{92}Mo(^{32}S,xpyn) E=220 MeV, on-line ms (1992ZiZW,1992ZiZY).

^{116}I produced from ^{103}Rh(^{16}O,3n) E=83 MeV, on-line ms (1976Go02).

Daughter(^{116}Xe) from Ce(p,5pxn) E=600 MeV, on-line ms (1969Ha03).

^{116}Te Levels

E(level)	J$^{\pi\dagger}$	T$_{1/2}$	Comments
0.0	0$^+$	2.49 h *4*	
678.92 *3*	2$^+$		
1059.79 *8*			E(level): no E0 to g.s. found by 1992ZiZW.
1219.12 *5*	2$^+$		
1360	4$^+$		
1637.59 *5*	3$^+$		
1811.49 *11*	4$^+$		E(level): a weak β branching to this level is given by 1992ZiZW?
2080.95 *5*	(1,2$^+$)		

† From Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	I$\beta^{+\#}$	I$\varepsilon^\#$	Log ft	I($\varepsilon+\beta^+$)$^{\ddagger\#}$	Comments
(5.70×10^3 *10*)	2080.95	2.2	0.16	5.3	2.4	av Eβ=2142 *63*; εK=0.058 *5*; εL=0.0076 *7*; εM+=0.00200 *17*
(6.14×10^3 *10*)	1637.59	1.7	0.095	5.6	1.8	av Eβ=2354 *63*; εK=0.045 *4*; εL=0.0059 *5*; εM+=0.00156 *12* Iβ^+: 1992ZiZW assigns 2$^+$ to this level because it seems feed from 1$^+$. The evaluator has adopted the result of 1986Lo14 in (^{3}He,3nγ).
(6.56×10^3 *10*)	1219.12	3.0	0.13	5.5	3.1	av Eβ=2555 *63*; εK=0.036 *3*; εL=0.0047 *4*; εM+=0.00125 *9*
(6.72×10^3 *10*)	1059.79	0.3	0.01	6.6	0.3	av Eβ=2632 *63*; εK=0.0336 *23*; εL=0.0044 *3*; εM+=0.00115 *8*
(7.10×10^3 *10*)	678.92	18.7	0.63	4.9	19.3	av Eβ=2816 *63*; εK=0.0280 *18*; εL=0.00364 *23*; εM+=0.00096 *6*
(7.78×10^{3†} *10*)	0.0	70.8	1.75	4.5	72.6	av Eβ=3144 *64*; εK=0.0207 *12*; εL=0.00269 *16*; εM+=0.00071 *4*

† E(β^+)=6740 *130* (1970BeYT), 6690 *200* (1976Go02).

‡ From $\gamma^\pm$ intensity (1976Go02) and theoretical ε/β^+. Due to large Q value, and the probable incompleteness of the decay scheme, only the strong branches to g.s. and 679 level are considered by the evaluators to be reliable. Other feedings should probably be considered as upper limits.

$^\#$ Absolute intensity per 100 decays.

^{116}I β^+ **decay**   **1992ZiZW,1976Go02** (continued)

$\gamma(^{116}$Te)

Iγ normalization: from I(β^+)/Iγ(679γ)=11.40 *16* (1976Go02).

E$_\gamma$	I$_\gamma$[†‡]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Comments
380.88 *8*	2.06 *15*	1059.79		678.92	2$^+$	
540.21 *4*	14.8 *5*	1219.12	2$^+$	678.92	2$^+$	
577.91 *20*	0.9 *3*	1637.59	3$^+$	1059.79		
678.92 *3*	100.0 *5*	678.92	2$^+$	0.0	0$^+$	
681	<0.5	1360	4$^+$	678.92	2$^+$	I$_\gamma$: the intensity given by 1992ZiZW is an upper limit. The evaluators think that this measurement needs confirmation.
[x]742.7 *4*	0.73 *17*					
861.84 *5*	3.00 *16*	2080.95	(1,2$^+$)	1219.12	2$^+$	
958.66 *3*	5.64 *15*	1637.59	3$^+$	678.92	2$^+$	
1132.57 *10*	1.92 *13*	1811.49	4$^+$	678.92	2$^+$	
[x]1219	<0.02					
[x]1360	<0.05					
[x]1368.1 *3*	0.86 *13*					
1402.01 *5*	5.93 *18*	2080.95	(1,2$^+$)	678.92	2$^+$	
[x]1633.0 *9*	1.02 *23*					
[x]1637	<0.09					
1811[#]	<0.02	1811.49	4$^+$	0.0	0$^+$	
[x]1903.83 *13*	1.83 *12*					
2081	<0.35	2080.95	(1,2$^+$)	0.0	0$^+$	
[x]2154.4 *20*	0.7 *3*					

[†] From 1992ZiZW, I($\gamma^\pm$)=2280 *32*, summed I(β^+)=1140 *16* (1976Go02).
[‡] For absolute intensity per 100 decays, multiply by 0.0855.
[#] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{116}**I β^+ decay**　　**1992ZiZW,1976Go02**

Decay Scheme

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

Legend

— — →　I$_\gamma < $ 2%$\times$I$_\gamma^{max}$
— — →　I$_\gamma < $ 10%$\times$I$_\gamma^{max}$
— — →　I$_\gamma > $ 10%$\times$I$_\gamma^{max}$
- - - →　γ Decay (Uncertain)

1$^+$　　　0.0　　2.91 s *15*

%ε + %β^+=100　　Q$_\varepsilon$=7.78$\times$10^3 *10*

$^{116}_{53}$I$_{63}$

		Iβ^+	Iε	Log *ft*
(1,2$^+$)	2080.95	2.2	0.16	5.3
4$^+$	1811.49			
3$^+$	1637.59	1.7	0.095	5.6
4$^+$	1360			
2$^+$	1219.12	3.0	0.13	5.5
	1059.79	0.3	0.01	6.6
2$^+$	678.92	18.7	0.63	4.9
0$^+$	0.0	2.49 h *4* 70.8	1.75	4.5

2081 <0.030
1402.01 0.507
861.84 0.257
1811 <0.00171
1132.57 0.164
958.66 0.482
577.91 0.08
681 <0.043
540.21 1.27
380.88 0.176
678.92 8.55

$^{116}_{52}$Te$_{64}$