^{70}Se β^+ decay 1974Te04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal, E. A. Mccutchan	NDS 136, 1 (2016)	1-Jul-2016

Parent: ^{70}Se: E=0.0; $J^\pi=0^+$; $T_{1/2}$=41.1 min *3*; Q(β^+)=2.41×10^3 *5*; %β^+ decay=100.0

1974Te04: ^{70}Se source produced by ^{70}Ge(^{3}He, 3n) at E=35 MeV. Please see the paper for the details of the target and the chemical separation techniques used and the corrections for the contaminations. γ-rays were detected using one Compton suppressed Ge(Li) detector. The low energy γ-rays were measured using a LEPS detector. Measured: E_γ, I_γ, I_e, $\gamma\gamma$ coincidences.

1968Bo40: ^{70}Se source produced by ^{59}Co(^{14}N, 3n) at E_{beam}=140 MeV. γ-rays detected using a Ge(Li) detector. The decay of ^{70}Se and ^{70}As were detected using a GM counter.

α: Additional information 1.

^{70}As Levels

E(level)	J^π†	E(level)	J^π†	E(level)	J^π†	E(level)	J^π†
0.0	4^+	167.71 *6*	$(2)^+$	328.70 *22*	1^+	581.58 *9*	1^+‡
32.05 *3*	2^+	234.78 *7*	1^+‡	344.75 *9*	$(0)^+$	890.57 *13*	1^+‡
81.56 *4*	1^+‡	325.67 *7*	2^+	458.21 *5*	1^+‡	1650.95 *94*	1^+‡

† From Adopted Levels.
‡ 1^+ from log *ft*.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+‡	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(7.6×10^2 *5*)	1650.95		0.81 *11*	4.99 *9*	0.81 *11*	εK=0.1 *3*; εL=0.10147 *18*; εM+=0.01941 *4*
(1.52×10^3 *5*)	890.57	0.056 *21*	0.72 *7*	5.64 *6*	0.78 *7*	av Eβ=216 *22*; εK=0.818 *24*; εL=0.093 *3*; εM+=0.0178 *6*
(1.83×10^3 *5*)	581.58	1.6 *3*	3.9 *4*	5.08 *6*	5.5 *4*	av Eβ=349 *22*; εK=0.62 *4*; εL=0.070 *5*; εM+=0.0134 *9*
(1.95×10^3 *5*)	458.21	18.2 *22*	26.7 *24*	4.29 *6*	44.9 *22*	av Eβ=402 *22*; εK=0.52 *4*; εL=0.060 *5*; εM+=0.0114 *9*
(2.07×10^3 *5*)	344.75	0.5 *6*	0.5 *6*	6.1 *6*	1.0 *12*	av Eβ=452 *22*; εK=0.44 *4*; εL=0.050 *4*; εM+=0.0096 *8*
(2.08×10^3 *5*)	328.70	0.42 *9*	0.41 *9*	6.17 *11*	0.83 *17*	av Eβ=459 *22*; εK=0.43 *4*; εL=0.049 *4*; εM+=0.0093 *8*
(2.18×10^3 *5*)	234.78	2.70 *23*	1.95 *21*	5.53 *6*	4.65 *25*	av Eβ=501 *23*; εK=0.37 *4*; εL=0.042 *4*; εM+=0.0080 *7*
(2.33×10^3 *5*)	81.56	27.2 *19*	13.2 *14*	4.76 *6*	40.4 *22*	av Eβ=569 *23*; εK=0.287 *25*; εL=0.033 *3*; εM+=0.0062 *6*

† From intensity balance of each of level in 1974Te04.
‡ Absolute intensity per 100 decays.

$\gamma(^{70}As)$

Iγ normalization: from the sum of intensities of γ's feeding the 32 level and assuming that there is no direct feeding of g.s. (ΔJ=4) or 32 level (ΔJ=2).

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^{70}Se β^+ decay 1974Te04 (continued)

$\gamma(^{70}As)$ (continued)

E_γ	I_γ[†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α	Comments
32.05 *3*	6.6 *3*	32.05	2^+	0.0	4^+	E2	50.3	α(L)exp≈12 (1974Te04) α(K)=36.8 *6*; α(L)=11.65 *17*; α(M)=1.75 *3*; α(N)=0.0962 *14*
[x]39.59 *5*	1.4 *2*							
49.51 *3*	123 *2*	81.56	1^+	32.05	2^+	(M1)	0.643	α(K)=0.570 *8*; α(L)=0.0628 *9*; α(M)=0.00959 *14*; α(N)=0.000719 *11* K/L: 10 *1* is consistent with E1 or M1 multipolarity (1974Te04). ce(L)(32γ)/ce(K)(49γ)=1.15.
86.25 *9*	2.7 *2*	167.71	$(2)^+$	81.56	1^+	[M1+E2]	0.8 *7*	α(K)=0.6 *6*; α(L)=0.09 *8*; α(M)=0.014 *12*; α(N)=0.0009 *8*
113.53 *7*	5.4 *2*	458.21	1^+	344.75	$(0)^+$			
129.49 *17*	1.0 *2*	458.21	1^+	328.70	1^+			
132.54 *5*	12.1 *2*	458.21	1^+	325.67	2^+			
135.63 *5*	9.0 *2*	167.71	$(2)^+$	32.05	2^+			
153.20 *15*	1.5 *2*	234.78	1^+	81.56	1^+	[M1+E2]	0.09 *7*	α(K)=0.08 *6*; α(L)=0.010 *7*; α(M)=0.0015 *11*; α(N)=0.00011 *8*
160.79 *10*	2.7 *2*	328.70	1^+	167.71	$(2)^+$	M1(+E2)	0.08 *6*	α(K)=0.07 *5*; α(L)=0.008 *6*; α(M)=0.0012 *9*; α(N)=9.E−5 *6*
[x]198.7 *3*	0.6 *2*							
202.73 *6*	16.8 *2*	234.78	1^+	32.05	2^+	M1	0.01390	α(K)=0.01237 *18*; α(L)=0.001315 *19*; α(M)=0.000201 *3*; α(N)=1.522×10^{-5} *22*
223.41 *11*	2.2 *2*	458.21	1^+	234.78	1^+			
244.14 *9*	9.8 *3*	325.67	2^+	81.56	1^+	M1	0.00869	α(K)=0.00774 *11*; α(L)=0.000818 *12*; α(M)=0.0001249 *18*; α(N)=9.49×10^{-6} *14*
247.5 *4*	1.5 *2*	328.70	1^+	81.56	1^+	M1(+E2)	0.018 *10*	α(K)=0.016 *9*; α(L)=0.0018 *10*; α(M)=0.00027 *15*; α(N)=2.0×10^{-5} *11*
255.86 *8*	6.3 *2*	581.58	1^+	325.67	2^+	M1	0.00773	α(K)=0.00688 *10*; α(L)=0.000727 *11*; α(M)=0.0001110 *16*; α(N)=8.43×10^{-6} *12*
263.20 *8*	9.5 *2*	344.75	$(0)^+$	81.56	1^+	M1	0.00721	α(K)=0.00642 *9*; α(L)=0.000677 *10*; α(M)=0.0001034 *15*; α(N)=7.86×10^{-6} *11*
290.2 *4*	1.5 *4*	458.21	1^+	167.71	$(2)^+$			
293.59 *9*	9.7 *3*	325.67	2^+	32.05	2^+	M1	0.00550	α(K)=0.00490 *7*; α(L)=0.000516 *8*; α(M)=7.88×10^{-5} *11*; α(N)=5.99×10^{-6} *9*
297.1 *4*	1.5 *3*	328.70	1^+	32.05	2^+	M1	0.00535	α(K)=0.00476 *7*; α(L)=0.000501 *8*; α(M)=7.65×10^{-5} *11*; α(N)=5.82×10^{-6} *9*
[x]301.8 *4*	1.2 *3*							
312.64 *26*	0.8 *2*	344.75	$(0)^+$	32.05	2^+	[E2]	0.01199	α(K)=0.01064 *16*; α(L)=0.001165 *17*; α(M)=0.000177 *3*; α(N)=1.306×10^{-5} *19*
[x]343.85 *15*	2.3 *2*							
376.65 *8*	32.4 *3*	458.21	1^+	81.56	1^+	M1	0.00302	α(K)=0.00269 *4*; α(L)=0.000281 *4*; α(M)=4.29×10^{-5} *6*; α(N)=3.27×10^{-6} *5*
413.91 *8*	7.2 *2*	581.58	1^+	167.71	$(2)^+$	M1	0.00241	α(K)=0.00215 *3*; α(L)=0.000225 *4*; α(M)=3.43×10^{-5} *5*; α(N)=2.61×10^{-6} *4*
426.15 *8*	100	458.21	1^+	32.05	2^+	M1	0.00225	α(K)=0.00201 *3*; α(L)=0.000210 *3*; α(M)=3.20×10^{-5} *5*; α(N)=2.44×10^{-6} *4*
[x]458.42 *25*	0.9 *2*							
499.69 *27*	4.4 *6*	581.58	1^+	81.56	1^+			
545.91 *21*	1.1 *1*	890.57	1^+	344.75	$(0)^+$			
549.69 *22*	1.0 *1*	581.58	1^+	32.05	2^+			
561.56 *22*	0.6 *1*	890.57	1^+	328.70	1^+			
564.86 *21*	0.6 *1*	890.57	1^+	325.67	2^+			
858.71 *28*	0.4 *1*	890.57	1^+	32.05	2^+			
1323.7 *12*	1.2 *3*	1650.95	1^+	328.70	1^+			

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^{70}Se β^+ decay 1974Te04 (continued)

$\gamma(^{70}As)$ (continued)

E_γ	I_γ †#	E_i(level)	J_i^π	E_f	J_f^π
1570.5 *9*	1.0 *1*	1650.95	1^+	81.56	1^+
1618.8 *4*	0.6 *1*	1650.95	1^+	32.05	2^+

† Relative intensity with Iγ(426)=100.
‡ From Adopted Gammas, unless otherwise stated.
# For absolute intensity per 100 decays, multiply by 0.291 *6*.
x γ ray not placed in level scheme.

^{70}Se β^+ decay 1974Te04

Decay Scheme

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