^{56}Cu ε decay (93 ms) 2001Bo54,1998Ra15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huo Junde, Huo Su, Yang Dong	NDS 112, 1513 (2011)	29-Oct-2009

Parent: ^{56}Cu: E=0.0; J$^{\pi}$=(4^{+}); $T_{1/2}$=93 ms *3*; Q(ε)=15.30×10^{3} *14*; %ε+%β^{+} decay=100.0

^{56}Cu-$T_{1/2}$: From 2001Bo54.

Additional information 1.

1998Ra15: mass-separated source produced by Si(^{32}S,XpYn) E=148 MeV natural target, measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$ coin, delayed protons.

2001Bo54: mass-separated source produced by ^{28}Si(^{32}S,p3n) reaction. Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$ coin, delayed protons.

2002Ro16: mass-separated source produced by ^{28}Si(^{32}S,p3n) reaction. Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$ coin.

All data are from 2001Bo54, except As noted.

^{56}Ni Levels

E(level)†	J$^{\pi}$	Comments
0	0^{+}	
2700.6 *3*	2^{+}	T=0
3925.2 *4*	4^{+}	T=0
4935.5 *6*	(3^{+})	T=0
5481.2 *5*	(4^{+})	T=0
5988.1 *6*	(3^{+},4^{+},5^{+})	T=0 J$^{\pi}$=(3^{+}) and T=0,1 quoted in 2001Bo54 have been revised by the authors. The revised note further suggests that J$^{\pi}$=(4^{+}) and T=0 are favored by shell-model calculations.
6431.9 *7*	4^{+}	T=1
6588.6 *8*	(3^{+})	T=1 (2001Bo54) J$^{\pi}$=(3,4,5)$^{(+)}$ and T=0,1 quoted in 2001Bo54 have been revised by the authors. The revised assignment is based on a comparison of energy differences of isobaric analog states in ^{56}Ni and ^{56}Cu.

† From least-squares fit to Eγ′s. The values given here differ slightly from those in 2001Bo54, due to gamma-ray energy mismatches in Table 1 and Figure 3 of 2001Bo54.

ε,β^{+} radiations

Total β^{+} feeding adds to 129 *9* rather than 100. The discrepancy is ascribed (by 2001Bo54) to unobserved γ rays.

E(decay)	E(level)	Iβ^{+} †	Iε†	Log *ft*	I(ε+β^{+})†	Comments
(8.71×10^{3} *14*)	6588.6	7.6 *17*	0.0089 *21*	4.40 *11*	7.6 *17*	av Eβ=3633 *69*; εK=0.00104 *6*; εL=0.000112 *7*; εM+=1.90×10^{-5} *11*
(8.87×10^{3} *14*)	6431.9	67 *4*	0.074 *6*	3.50 *5*	67 *4*	av Eβ=3711 *70*; εK=0.00098 *6*; εL=0.000106 *6*; εM+=1.79×10^{-5} *10*
(9.31×10^{3} *14*)	5988.1	11.6 *19*	0.0109 *19*	4.37 *8*	11.6 *19*	av Eβ=3930 *70*; εK=0.00083 *5*; εL=9.0×10^{-5} *5*; εM+=1.52×10^{-5} *8*
(9.82×10^{3} *14*)	5481.2	10.0 *21*	0.0079 *17*	4.56 *10*	10.0 *21*	av Eβ=4181 *70*; εK=0.00070 *4*; εL=7.5×10^{-5} *4*; εM+=1.27×10^{-5} *7*
(1.036×10^{4} *14*)	4935.5	10 *3*	0.0066 *20*	4.68 *14*	10 *3*	av Eβ=4451 *70*; εK=0.00059 *3*; εL=6.3×10^{-5} *3*; εM+=1.07×10^{-5} *5*
(1.137×10^{4} *14*)	3925.2	22 *7*	0.011 *3*	4.55 *15*	22 *7*	av Eβ=4952 *70*; εK=0.000432 *18*; εL=4.66×10^{-5} *20*; εM+=7.9×10^{-6} *4*

† Absolute intensity per 100 decays.

^{56}Cu ε decay (93 ms) 2001Bo54,1998Ra15 (continued)

$\gamma(^{56}Ni)$

Intensity of annihilation radiation (511 keV)=309 *17* (2001Bo54), intensity of annihilation radiation (511 keV)=233 *15* (1998Ra15).

E_γ	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f
950.7 *5*	6.7 *11*	6431.9	4^+	5481.2	(4^+)
1010.4 *4*	8.7 *16*	4935.5	(3^+)	3925.2	4^+
1224.5[†] *2*	77 *4*	3925.2	4^+	2700.6	2^+
1653.1 *4*	5.9 *13*	6588.6	(3^+)	4935.5	(3^+)
2062.8 *4*	5.1 *14*	5988.1	$(3^+,4^+,5^+)$	3925.2	4^+
2234.5[†] *7*	5.2 *14*	4935.5	(3^+)	2700.6	2^+
2506.7 *3*	46.1 *24*	6431.9	4^+	3925.2	4^+
2700.6 *3*	100 *3*	2700.6	2^+	0	0^+
2780.4[†] *4*	14.5 *12*	5481.2	(4^+)	2700.6	2^+
3287.4 *5*	4.0 *5*	5988.1	$(3^+,4^+,5^+)$	2700.6	2^+

[†] From Table 1 of 2001Bo54. The value is somewhat different in Figure 3 of 2001Bo54. The authors state that value in Table 1 is correct and the some values quoted in Figure 3 have typographical errors, see Nucl. Phys. A703, 889-890 (2002).

[‡] For absolute intensity per 100 decays, multiply by 1.28.

^{56}Cu ε decay (93 ms) 2001Bo54,1998Ra15