^{128}Pr ε decay 1999Xi03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Zoltan Elekes and Janos Timar	NDS 129, 191 (2015)	28-Feb-2015

Parent: ^{128}Pr: E=0.0; J^π=4,5,6; $T_{1/2}$=2.85 s *9*; Q(ε)=9.20×10^3 *4*; %ε+%$β^+$ decay=100.0

1999Xi03: ^{96}Ru(^{36}Ar,xpyn) E(^{36}Ar)=^{22}O MeV; 94% enriched target, He-jet method; HPGe γ γγ(t), (K x ray)γ(t).

1988Ba42, 1994GiZZ: $^{92-}$96MO(^{40}Ca,xnyp),E(^{40}Ca)=250 MeV, He-jet method; G.

1997As05, 1998AsZX: for experimental details, see the comment on the ^{128}La ε decay (<1.4 min).

The decay scheme is that proposed by 1999Xi03. The levels at 799 and 1080 keV proposed by 1988Ba42 are not confirmed in 1999Xi03.

α: Additional information 1.

^{128}Ce Levels

E(level)†	J^π‡	$T_{1/2}$	E(level)†	J^π‡	E(level)†	J^π‡
0.0	0^+	3.93 min *2*	1052.3 *5*	0^+	1311.8 *7*	4^+
207.0 *5*	2^+		1138.6 *6*	3^+	1700.7 *7*	
606.6 *5*	4^+		1157.2 *6*	6^+	1889.0 *7*	5^-
869.4 *6*	2^+		1305.9 *5*	2^+	1979.4 *7*	$4^{(-)}$

† From a least-squares fit to Eγ's by the evaluators.

‡ From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(7.22×10^3 *4*)	1979.4	2.3 *4*	0.12 *2*	5.82 *8*	2.4 *4*	av Eβ=2874 *20*; εK=0.0440 *8*; εL=0.00603 *11*; εM+=0.00169 *3*
(7.31×10^3 *4*)	1889.0	1.7 *4*	0.089 *20*	5.97 *10*	1.8 *4*	av Eβ=2918 *20*; εK=0.0423 *8*; εL=0.00579 *11*; εM+=0.00163 *3*
(7.50×10^3 *4*)	1700.7	1.3 *4*	0.064 *18*	6.14 *13*	1.4 *4*	av Eβ=3008 *20*; εK=0.0390 *7*; εL=0.00534 *10*; εM+=0.00150 *3*
(7.89×10^3 *4*)	1311.8	1.4 *4*	0.058 *16*	6.22 *12*	1.5 *4*	av Eβ=3196 *20*; εK=0.0332 *6*; εL=0.00454 *8*; εM+=0.001276 *21*
(7.89×10^3 *4*)	1305.9	3.8 *7*	0.16 *3*	5.80 *8*	4.0 *7*	av Eβ=3199 *20*; εK=0.0331 *6*; εL=0.00453 *8*; εM+=0.001273 *21*
(8.04×10^3 *4*)	1157.2	1.5 *5*	0.059 *18*	6.24 *14*	1.6 *5*	av Eβ=3271 *20*; εK=0.0312 *5*; εL=0.00426 *7*; εM+=0.001199 *20*
(8.06×10^3 *4*)	1138.6	3.9 *3*	0.15 *1*	5.85 *4*	4.0 *3*	av Eβ=3280 *20*; εK=0.0309 *5*; εL=0.00423 *7*; εM+=0.001190 *20*
(8.15×10^3 *4*)	1052.3	10.81 *20*	0.394 *10*	5.423 *20*	11.20 *21*	av Eβ=3321 *20*; εK=0.0299 *5*; εL=0.00409 *7*; εM+=0.001150 *19*
(8.33×10^3 *4*)	869.4	4.64 *20*	0.157 *7*	5.84 *3*	4.80 *21*	av Eβ=3410 *20*; εK=0.0279 *5*; εL=0.00381 *6*; εM+=0.001071 *17*
(8.59×10^3 *4*)	606.6	16.2 *14*	0.50 *4*	5.37 *4*	16.7 *14*	av Eβ=3537 *20*; εK=0.0252 *4*; εL=0.00345 *6*; εM+=0.000970 *15*
(8.99×10^3 *4*)	207.0	49.3 *13*	1.30 *4*	4.990 *21*	50.6 *13*	av Eβ=3731 *20*; εK=0.0218 *4*; εL=0.00298 *5*; εM+=0.000839 *12*

† Absolute intensity per 100 decays.

^{128}Pr ε decay 1999Xi03 (continued)

γ(^{128}Ce)

E_γ †	I_γ †[b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.&	δ[a]	α	Comments
207.3 *5*	85.9	207.0	2^+	0.0	0^+	E2		0.163 *3*	I_γ: from I(γ+ce)=100 given by author's.
x253‡									
253‡ *1*		1305.9	2^+	1052.3	0^+				
399.7 *3*	26 *1*	606.6	4^+	207.0	2^+	E2		0.0203	
550.6 *3*	3.4 *3*	1157.2	6^+	606.6	4^+				
x592#c									
662.4 *4*	4.8 *2*	869.4	2^+	207.0	2^+				
699.4 *4*	1.1 *5*	1305.9	2^+	606.6	4^+				E_γ: value of 669.4 keV in the authors' Table 2 is misprint.
705.2 *4*	1.5 *4*	1311.8	4^+	606.6	4^+	M1+E2		0.00665	
731.8 *4*	1.8 *4*	1889.0	5^-	1157.2	6^+	D			
x799#c									
845.3 *3*	11.2 *2*	1052.3	0^+	207.0	2^+				
x873#c									
931.6 *4*	4.0 *3*	1138.6	3^+	207.0	2^+	M1+E2	4.2 *+24−15*	0.00241 *8*	
1052@ *1*	0.0071@ *21*	1052.3	0^+	0.0	0^+	E0			
1094.1 *4*	1.4 *4*	1700.7		606.6	4^+				
1099.0 *4*	2.9 *4*	1305.9	2^+	207.0	2^+				E_γ: other: 1100 (1998AsZX).
1305‡ *1*		1305.9	2^+	0.0	0^+				E_γ: not reported in 1999Xi03.
1372.8 *4*	2.4 *4*	1979.4	$4^{(-)}$	606.6	4^+	D			

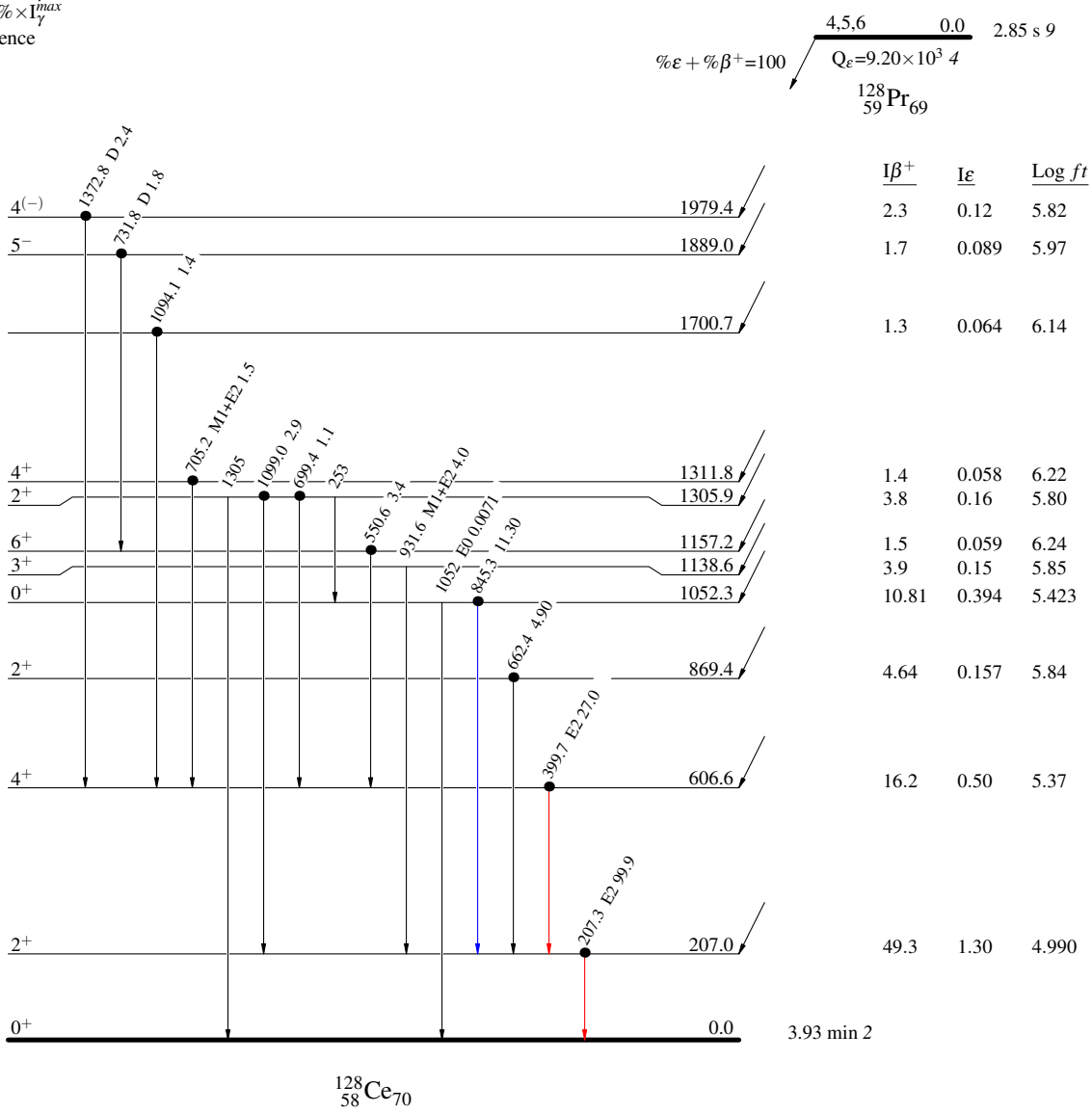
† From 1999Xi03, unless otherwise noted.
‡ From 1998AsZX.
# From 1988Ba42, but those were not confirmed by 1999Xi03.
@ From 1994GiZZ.
& From Adopted Gammas.
[a] If No value given it was assumed δ=0.10 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[b] For absolute intensity per 100 decays, multiply by 1.000 *5*.
[c] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{128}Pr ε decay 1999Xi03

Decay Scheme

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

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- Coincidence



	Iβ+	Iε	Log *ft*
1979.4	2.3	0.12	5.82
1889.0	1.7	0.089	5.97
1700.7	1.3	0.064	6.14
1311.8	1.4	0.058	6.22
1305.9	3.8	0.16	5.80
1157.2	1.5	0.059	6.24
1138.6	3.9	0.15	5.85
1052.3	10.81	0.394	5.423
869.4	4.64	0.157	5.84
606.6	16.2	0.50	5.37
207.0	49.3	1.30	4.990