^{120}Ba ε decay 1992Xu04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Kitao, Y. Tendow and A. Hashizume	NDS 96, 241 (2002)	1-Dec-2001

Parent: ^{120}Ba: E=0.0; $J^\pi=0^+$; $T_{1/2}$=24 s *2*; Q(ε)=5.00×10^3 *30*; %ε+%$β^+$ decay=100.0

1992Xu04: ^{106}Cd(^{16}O,2n) E=78 MeV, 80% enriched target, on-line mass separation; γ, $β^+$; γγ, βγ, γX coin; βγ(t), γγ(t); Q, $T_{1/2}$.

1977Bo02: source from ^{96}Ru(^{32}S,X) E=190 MeV, on-line mass separation; γ, $β^+$.

The decay scheme is that proposed by 1992Xu04.

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Q+=5000 300 Deduced From Eβ's (1992Xu04):
          Eβ(to 269L)=3690 From (β+)(269.9γ) Coin
          Eβ(to 319L)=3590 From (β+)(126.4γ+139.7γ) Coin
          Eβ(to 345L)=3640 From (β+)(152.4γ+165.7γ) Coin
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^{120}Cs Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	2(+)	179.44 *15*	#	269.91 *18*		336.9 *3*	
102.58 *18*		192.77 *16*	#	285.2 *3*		345.15 *17*	1+
134.8? *3*		248.90 *20*		319.15 *19*	1+	407.3? *4*	

† From least-squares fit to the E(γ's) by evaluators.
‡ From Adopted Levels.
# (1+) for either level.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
(4.7×10^3 *3*)	345.15	35 *13*	7 *3*	4.50 *23*	39 *14*	av Eβ=1.65×10^3 *15*; εK=0.14 *4*; εL=0.019 *5*; εM+=0.0052 *13*
(4.7×10^3 *3*)	336.9	<5	<1.0	>5.4	<5	av Eβ=1.66×10^3 *15*; εK=0.14 *4*; εL=0.019 *5*; εM+=0.0052 *13*
(4.7×10^3 *3*)	319.15	27 *7*	5.2 *18*	4.63 *19*	29 *7*	av Eβ=1.67×10^3 *15*; εK=0.14 *4*; εL=0.019 *5*; εM+=0.0052 *12*
(4.7×10^3 *3*)	269.91	<16	<3.0	>4.9	<19	av Eβ=1.69×10^3 *15*; εK=0.13 *3*; εL=0.018 *5*; εM+=0.0050 *12*
(4.8×10^3 *3*)	248.90	<2.6	<0.48	>5.7	7.1 *20*	av Eβ=1.70×10^3 *15*; εK=0.13 *3*; εL=0.018 *4*; εM+=0.0049 *12*
(4.8×10^3 *3*)	179.44	25 *9*	4.3 *19*	4.74 *23*	26 *10*	av Eβ=1.73×10^3 *15*; εK=0.13 *3*; εL=0.017 *4*; εM+=0.0047 *11* feeding is tentative due to possible transition to the 179 level from the 192 level.
(4.9×10^3 *3*)	102.58	<0.9	<0.1	>6.2	<1	av Eβ=1.77×10^3 *15*; εK=0.12 *3*; εL=0.016 *4*; εM+=0.0045 *10*

† These branchings are tentative because the uncertainty In the decay scheme arising from probable feedings to higher unobserved levels.
‡ Absolute intensity per 100 decays.

^{120}Ba ε decay 1992Xu04 (continued)

γ(^{120}Cs)

Iγ normalization: No g.s. β feeding assumed.

E_γ [†]	I_γ [‡a]	E_i(level)	E_f	J^π_f	α [@]	$I_{(\gamma+ce)}$ [#a]	Comments
(13.4)		192.77	179.44				$I_{(\gamma+ce)}$: >10 *8* from intensity balance At the 192 level.
[x]51 [&] *3*							
75.2 *3*	10 *4*	345.15	269.91		2.7 *24*	37 *28*	
76.9 *3*	9 *4*	179.44	102.58		1.2 *7*	20 *11*	Mult.: rules out E2 from intensity balance. $I_{(\gamma+ce)}$: assumed α=[α(E1)+α(M1)]/2.
102.6 *2*	9 *3*	102.58	0.0	2(+)	1.0 *8*	18 *9*	
122.1[b] *2*	6 *3*	407.3?	285.2		0.5 *4*	9 *5*	
126.4 *2*	7 *2*	319.15	192.77		0.5 *4*	11 *4*	
134.8[b] *3*	<5	134.8?	0.0	2(+)		4 *4*	
139.7 *2*	38 *6*	319.15	179.44		0.33 *25*	51 *13*	
146.0[b] *3*	<4	248.90	102.58			3 *3*	
152.4 *2*	14 *3*	345.15	192.77		0.25 *8*	18 *5*	
165.7 *2*	23 *4*	345.15	179.44		0.19 *14*	27 *6*	
179.4 *2*	100	179.44	0.0	2(+)	0.14 *10*	114 *10*	E_γ: other: 182 *3* (1977Bo02).
182.6 *2*	7 *2*	285.2	102.58		0.13 *10*	8 *2*	
192.8 *2*	17 *3*	192.77	0.0	2(+)	0.11 *8*	19 *4*	
234.3 *2*	<10	336.9	102.58			5 *5*	
248.9 *2*	14 *4*	248.90	0.0	2(+)	0.05 *3*	15 *4*	
269.9 *2*	43 *7*	269.91	0.0	2(+)	0.038 *24*	45 *7*	

[†] From 1992Xu04, unless otherwise noted.
[‡] Relative to I(179γ)=100.
[#] Mult=D,E2 assumed for all γ′s except for 76.9γ.
[@] From α=[α(E1)+α(E2)]/2, unless otherwise noted.
[&] From 1977Bo02.
[a] For absolute intensity per 100 decays, multiply by 0.47 *4*.
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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Decay Scheme

Legend

Intensities: I(γ+ce) per 100 parent decays, assumed mult=D,E2 except for 76.9γ (mult=D)For 76.9γ (mult=D)

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence