^{131}Ba ε decay 2003Sa62,1990Su07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov	NDS 107, 2715 (2006)	17-Jul-2006

Parent: ^{131}Ba: E=0.0; J$^{\pi}$=1/2^{+}; $T_{1/2}$=11.50 d *6*; Q(ε)=1376 *5*; %ε+%β^{+} decay=100.0

1976Ge14:^{131}Ba ε decay [from Pr(p,X) E=600-800 MeV, chemical extraction, separator; energy correction by 1982KhZW]; measured γ, $\gamma\gamma$ coin deduced ^{131}Cs levels. Ge(Li) detectors.

1964Ho17: ^{131}Ba ε decay; measured ce, xce-delay deduced ^{131}Cs levels, Ece, Ice, δ, $T_{1/2}$. Iron-free beta-ray spectrometer, plastic scintillations.

1969Fe02: ^{131}Ba ε decay; measured $\gamma\gamma(\theta)$, $\gamma\gamma$(90°,pol), $\gamma\gamma(\theta$,t), $\gamma\gamma(\theta$,H), ce$\gamma(\theta)$, xce-delay deduced ^{131}Cs levels, J^{π}, $T_{1/2}$, δ, g-factor. Ge(Li), Si(Li), NaI(Tl) detectors.

1980Kr17: ^{131}Ba ε decay; measured $\gamma\gamma(\theta)$ deduced ^{131}Cs levels, J^{π}, δ. Ge(Li) detectors.

1980VyZZ: ^{131}Ba ε decay; measured γ, ce deduced ^{131}Cs Eγ, Iγ, Ice, α(exp).

1990Su07: ^{131}Ba ε decay; measured γ, $\gamma\gamma$ coin deduced ^{131}Cs levels, Eγ, Iγ.

1995Ku32: ^{131}Ba ε decay; measured γ, xγ coin deduced ^{131}Cs Eγ, Iγ, K capture probabilities.

2003Sa62: ^{131}Ba ε decay; measured γ, ce deduced ^{131}Cs levels, J^{π}, Eγ, Iγ, Ice, α(exp). HPGe detector, mini-orange electron spectrometer.

Others: 1963Ke11, 1965Hi06, 1967Se03, 1969Kh09, 1970Ha45, 1970Ma21, 1972St20, 1972Dr02, 1975Mo12, 1977Sa20, 1978Vo11, 1978Va04, 1979Sh10, 1988Sa14, 1988Si02, 1999De49, 2000De13.

^{131}Cs Levels

The decay scheme is based on the coincidence relations and Ritz combination principle.
$T_{1/2}$(excited states) measured by $\gamma\gamma$(t), ceγ(t), xce(t).

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0	5/2^{+}	9.689 d *16*	$T_{1/2}$: from Adopted Levels, γ(t) measurements.
78.738 *5*	7/2^{+}	9.4 ns *2*	$T_{1/2}$: weighted average of 9.6 ns *3* (1964Ho17), 9.15 ns *30* (1969Fe02).
123.802 *3*	1/2^{+}	3.75 ns *5*	$T_{1/2}$: weighted average of 3.77 ns *5* (1960Bo24), 3.7 ns *1* (1964Ho17), 3.8 ns *1* (1963Va35), 3.48 ns *7* (1969Fe02), 3.79 ns *8* (1969Kh09), 3.80 ns 1 (1972Gu03). Others: 4.15 ns *8* (1961Na06), 3.5 ns *3* (1963Ke11).
133.623 *4*	5/2^{+}	8.6 ns *3*	g=+0.79 *5* (1969Fe02); g=+0.74 *3* (1972AoZZ); Q=0.022 *2* (2000De13) $T_{1/2}$: weighted average of 9.3 ns *3* (1964Ho17), 9.13 ns *20* (1969Kh09), 9.75 ns *30* (1969Fe02), 8.1 ns *1* (1972Gu03), 9.06 ns *16* (2000De13). Others: 13.5 ns *5* (1960Bo24), 12.7 ns *10* (1963Ke11). Q: from PAC measurements.
216.080 *5*	3/2^{+}	≤0.2 ns	$T_{1/2}$: from 1969Fe02, 1969Kh09.
373.246 *5*	3/2^{+}	≤0.25 ns	$T_{1/2}$: from 1969Kh09.
496.08[#] *6*	9/2^{+}		
585.039 *8*	3/2^{+}		
596.37 *5*	5/2^{+}		
620.120 *5*	1/2^{+}	<0.15 ns	$T_{1/2}$: from $\gamma\gamma$(t) (1963Va35).
657.61 *4*	7/2^{+}		
696.471 *8*	3/2^{+}		
764.12[#] *14*	(3/2^{+},5/2^{+})		
775.25[#] *6*	(11/2^{-})		
919.59 *4*	(3/2^{+},5/2^{+})		
1043.97[#] *6*	7/2^{+}		
1047.670 *7*	3/2^{+}		
1170.637 *24*	3/2^{+}		
1257.83[#] *7*	7/2^{+}		
1341.99 *4*	1/2,3/2		

Continued on next page (footnotes at end of table)

^{131}Ba ε decay 2003Sa62,1990Su07 (continued)

^{131}Cs Levels (continued)

† From least-squares fit to Eγ's.
‡ From multipolarities and $\gamma(\theta)$ measurements.
# The level is introduced by 2003Sa62 because of γ energy relations and available data on reactions.

ε,β^+ radiations

E(decay)	E(level)	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(34 *5*)	1341.99	0.0117 *8*	6.66 *17*	0.0117 *8*	εL=0.730 *25*; εM+=0.270 *20*
(118 *5*)	1257.83	0.0107 *11*	8.49 *7*	0.0107 *11*	εK=0.757 *7*; εL=0.187 *5*; εM+=0.0557 *17*
(205 *5*)	1170.637	0.190 *13*	7.84 *4*	0.190 *13*	εK=0.8087 *15*; εL=0.1486 *11*; εM+=0.0427 *4*
(328 *5*)	1047.670	1.47 *2*	7.414 *16*	1.47 *2*	εK=0.8288 *5*; εL=0.1335 *4*; εM+=0.03774 *12*
(332 *5*)	1043.97	0.017 *4*	9.36 *11*	0.017 *4*	εK=0.8291 *5*; εL=0.1332 *4*; εM+=0.03766 *12*
(456 *5*)	919.59	0.013 *2*	9.78 *7*	0.013 *2*	εK=0.8371 *3*; εL=0.12721 *18*; εM+=0.03569 *6*
(601 *5*)	775.25	0.022 *10*	9.80 *20*	0.022 *10*	εK=0.8419 *2*; εL=0.1236 *1*; εM+=0.03451 *3*
(680 *5*)	696.471	0.567 *11*	8.505 *11*	0.567 *11*	εK=0.8436 *1*; εL=0.12230 *8*; εM+=0.03409 *3*
(718 *5*)	657.61	0.047 *23*	9.64 *22*	0.047 *23*	εK=0.84430 *9*; εL=0.12177 *7*; εM+=0.03392 *2*
(756 *5*)	620.120	52.7 *5*	6.633 *8*	52.7 *5*	εK=0.8449; εL=0.12132 *6*; εM+=0.03377 *2*
(791 *5*)	585.039	1.24 *2*	8.156 *19*	1.24 *2*	εK=0.8454; εL=0.12094 *6*; εM+=0.03365 *2*
(1003 *5*)	373.246	20.2 *3*	7.305 *9*	20.2 *3*	εK=0.8477; εL=0.11922 *4*; εM+=0.03309 *1*
(1160 *5*)	216.080	21.7 *5*	7.404 *11*	21.7 *5*	εK=0.8488; εL=0.11837 *3*; εM+=0.032815 *8*
(1252 *5*)	123.802	1.7 *6*	8.58 *16*	1.7 *6*	εK=0.8491; εL=0.11794 *3*; εM+=0.032678 *8*

† From net γ feeding of each level.
‡ Absolute intensity per 100 decays.

$\gamma(^{131}Cs)$

Iγ normalization: from ΣI(γ+ce)=100 to g.s.

α(K)exp: from 1978Vo11 and 1980VyZZ besides as noted. The values of α(exp) are normalized by evaluators (using BrIcc program) to α_K=0.619, for 123.8 keV, E2 transition between the levels with J^π=1/2$^+$ and J^π=5/2$^+$.

See 1978Vo11, 1975Mo12, 1970Ha45, 1999De49 for penetration parameters.

E_γ[†‡]	I_γ[@b]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	δ[a]	α[c]	Comments
54.887 *5*	0.221 *5*	133.623	5/2$^+$	78.738	7/2$^+$	E2(+M1)	≥4	16.2 *4*	K:L1:L2:L3=34.0 *7*:3.14 *16*:19.8 *4*:26.3 *5* (1975Mo12) α(K)=6.07 *10*; α(L)=8.0 *3*; α(M)=1.75 *6*; α(N+..)=0.391 *13* α(N)=0.351 *11*; α(O)=0.0398 *13*; α(P)=0.0001625 *23* δ: from 1975Mo12.
72.43 *10*	0.020[‡] *3*	657.61	7/2$^+$	585.039	3/2$^+$	[E2]		5.94 *9*	Mult.: transition between levels with J^π=7/2$^+$ and J^π=3/2$^+$.
78.736 *6*	1.58 *3*	78.738	7/2$^+$	0.0	5/2$^+$	M1+E2	0.060 *11*	1.80	K:L1:L2:L3=67.8 *14*:7.54 *19*:0.71 *6*:0.24 *5* (1975Mo12) α(K)=1.533 *22*; α(L)=0.209 *4*; α(M)=0.0429 *8*; α(N+..)=0.01037 *18* α(N)=0.00906 *16*; α(O)=0.001253 *20*; α(P)=6.02×10^{-5} *9* δ: from 1975Mo12.
82.442 *15*	0.040 *4*	216.080	3/2$^+$	133.623	5/2$^+$	M1,E2		2.6 *11*	α(K)exp=2.4 *8*; K:L1:L2=33.9 *7*:4.26 *17*:0.67 *14* (1975Mo12) α(K)=1.7 *4*; α(L)=0.7 *6*; α(M)=0.15 *12*; α(N+..)=0.03 *3* α(N)=0.031 *24*; α(O)=0.004 *3*; α(P)=5.5×10^{-5} *3* δ: from 1975Mo12.
89.04 *13*	0.008[‡] *1*	585.039	3/2$^+$	496.08	9/2$^+$	[M3]		130.0 *21*	α(K)=77.6 *12*; α(L)=40.7 *7*; α(M)=9.40 *16*; α(N+..)=2.23 *4* α(N)=1.97 *4*; α(O)=0.249 *4*; α(P)=0.00743 *12* Mult.: assumed by evaluators from decay pattern.
92.288 *9*	1.25 *2*	216.080	3/2$^+$	123.802	1/2$^+$	M1+E2	0.19 *5*	1.18 *4*	α(K)=0.990 *18*; α(L)=0.151 *13*; α(M)=0.031 *3*; α(N+..)=0.0075 *6* α(N)=0.0065 *6*; α(O)=0.00088 *6*; α(P)=3.83×10^{-5} *6*
117.69 *13*	0.045[‡] *16*	775.25	(11/2$^-$)	657.61	7/2$^+$				E_γ: questionable placement on the base of energy relations only; γ from J^π=11/2$^-$ to J^π=7/2$^+$ have to be of mult.=M2 that is unlikely.
123.804 *3*	62.0 *5*	123.802	1/2$^+$	0.0	5/2$^+$	E2		0.878	K:L1:L2:L3=1000:94.9 *17*:116 *2*:126 *2* (1975Mo12); α(K)exp=0.63 *8* (1995Ku32) α(K)=0.619 *9*; α(L)=0.205 *3*; α(M)=0.0440 *7*; α(N+..)=0.01006 *14* α(N)=0.00896 *13*; α(O)=0.001074 *15*; α(P)=1.79×10^{-5} *3*

From ENSDF

γ(^{131}Cs) (continued)

E_γ [†‡]	I_γ [@b]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	δ [a]	α [c]	Comments
128.09 *14*	0.030 *2*	1047.670	3/2$^+$	919.59	(3/2$^+$,5/2$^+$)				
133.617 *5*	4.54 *5*	133.623	5/2$^+$	0.0	5/2$^+$	M1+E2	+0.51 *2*	0.454 *8*	α(K)exp=0.345 *8*; α(K)exp=0.47 *6* (1995Ku32); δ=0.52 *3* (1969Fe02) K:L1:L2:L3=44.3 *9*:5.24 *11*:1.62 *5*:1.42 *5* (1975Mo12) α(K)=0.370 *6*; α(L)=0.0664 *17*; α(M)=0.0139 *4*; α(N+..)=0.00328 *8* α(N)=0.00289 *7*; α(O)=0.000377 *9*; α(P)=1.356×10^{-5} *19* Possible B(E0)/B(E2)=0.015 *5* (1978Vo11).
137.323 *22*	0.080 *3*	216.080	3/2$^+$	78.738	7/2$^+$	E2		0.610	α(K)exp=0.42 *7* α(K)=0.443 *7*; α(L)=0.1320 *19*; α(M)=0.0283 *4*; α(N+..)=0.00648 *9* α(N)=0.00577 *8*; α(O)=0.000698 *10*; α(P)=1.311×10^{-5} *19*
157.160 *10*	0.372 *15*	373.246	3/2$^+$	216.080	3/2$^+$	M1,E2		0.32 *7*	α(L1)exp=0.036 *4* α(K)=0.25 *4*; α(L)=0.052 *24*; α(M)=0.011 *5*; α(N+..)=0.0026 *12* α(N)=0.0023 *11*; α(O)=0.00029 *12*; α(P)=8.61×10^{-6} *15* α(L1)=0.0272 *8*
216.088 *14*	42.4 *8*	216.080	3/2$^+$	0.0	5/2$^+$	M1+E2	+0.07 *3*	0.1062	α(K)exp=0.087 *4*; K:L1:L2:L3=99.0 *15*:12.2 *4*:0.72 *15*:0.11 *6* (1975Mo12) α(K)=0.0912 *13*; α(L)=0.01198 *18*; α(M)=0.00245 *4*; α(N+..)=0.000594 *9* α(N)=0.000518 *8*; α(O)=7.22×10^{-5} *11*; α(P)=3.57×10^{-6} *5*
239.621 *5*	5.20 *11*	373.246	3/2$^+$	133.623	5/2$^+$	M1+E2	−0.25 *10*	0.0810 *13*	α(K)exp=0.0688 *15*; K:L1:L2:L3=9.3 *14*:1.12 *17*:0.09 *2*:0.04 *1* (1964Ho17) α(K)=0.0693 *10*; α(L)=0.0093 *3*; α(M)=0.00191 *7*; α(N+..)=0.000462 *15* α(N)=0.000404 *13*; α(O)=5.59×10^{-5} *15*; α(P)=2.68×10^{-6} *4*
246.858 *13*	1.35 *1*	620.120	1/2$^+$	373.246	3/2$^+$	M1,E2		0.078 *4*	α(K)exp=0.0646 *22* α(K)=0.0649 *14*; α(L)=0.0106 *23*; α(M)=0.0022 *5*; α(N+..)=0.00052 *11* α(N)=0.00046 *10*; α(O)=6.1×10^{-5} *11*; α(P)=2.34×10^{-6} *17*
249.435 *11*	6.17 *21*	373.246	3/2$^+$	123.802	1/2$^+$	M1+E2	+0.63 *6*	0.0743	α(K)exp=0.0345 *13*; K:L1:L2:L3=9.5 *14*:1.13 *17*:0.12 *2*:0.04 *1* (1964Ho17) α(K)=0.0626 *9*; α(L)=0.00929 *21*; α(M)=0.00192 *5*; α(N+..)=0.000459 *11* α(N)=0.000402 *9*; α(O)=5.43×10^{-5} *11*; α(P)=2.34×10^{-6} *4*
268.71 *2*	0.019[‡] *5*	1043.97	7/2$^+$	775.25	(11/2$^-$)	M2		0.277	α(K)exp=0.22 *7* (2003Sa62) α(K)=0.231 *4*; α(L)=0.0365 *6*; α(M)=0.00763 *11*; α(N+..)=0.00185 *3* α(N)=0.001613 *23*; α(O)=0.000222 *4*; α(P)=1.038×10^{-5} *15*

$^{131}_{55}$Cs$_{76}$-4

γ(^{131}Cs) (continued)

E_γ[†‡]	I_γ[@b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ[a]	α[c]	Comments
279.17 *2*	0.025[‡] *12*	775.25	(11/2$^-$)	496.08	9/2$^+$				
294.503 *12*	0.361 *10*	373.246	3/2$^+$	78.738	7/2$^+$	E2		0.0461	α(K)exp=0.045 *3* α(K)=0.0377 *6*; α(L)=0.00670 *10*; α(M)=0.001400 *20*; α(N+..)=0.000329 *5* α(N)=0.000290 *4*; α(O)=3.76×10^{-5} *6*; α(P)=1.278×10^{-6} *18*
297.83 *15*	0.008[‡] *1*	1341.99	1/2,3/2	1043.97	7/2$^+$				
323.200 *24*	0.0133 *10*	696.471	3/2$^+$	373.246	3/2$^+$				E_γ,I_γ: from 1995Ku32.
351.202 *16*	0.199 *12*	1047.670	3/2$^+$	696.471	3/2$^+$	M1,E2		0.0280 *16*	α(K)exp=0.024 *3* α(K)=0.0237 *18*; α(L)=0.00345 *18*; α(M)=0.00071 *5*; α(N+..)=0.000170 *9* α(N)=0.000149 *8*; α(O)=2.02×10^{-5} *5*; α(P)=8.7×10^{-7} *12*
368.964 *28*	0.035 *7*	585.039	3/2$^+$	216.080	3/2$^+$				
373.256 *12*	30.0 *3*	373.246	3/2$^+$	0.0	5/2$^+$	M1+E2	−0.9 *3*	0.0238 *7*	α(K)exp=0.0198 *8*; K:L1:L2=14.8 *22*:1.9 *3*:0.25 *4* (1964Ho17) α(K)=0.0202 *7*; α(L)=0.00287 *5*; α(M)=0.000591 *12*; α(N+..)=0.0001418 *24* α(N)=0.0001241 *22*; α(O)=1.689×10^{-5} *24*; α(P)=7.5×10^{-7} *4*
390.06 *4*	0.0041 *4*	1047.670	3/2$^+$	657.61	7/2$^+$				
404.039 *7*	2.80 *2*	620.120	1/2$^+$	216.080	3/2$^+$	M1+E2	+0.8 *3*	0.0194 *7*	α(K)exp=0.0155 *18* α(K)=0.0165 *7*; α(L)=0.00228 *4*; α(M)=0.000469 *7*; α(N+..)=0.0001128 *16* α(N)=9.86×10^{-5} *14*; α(O)=1.351×10^{-5} *24*; α(P)=6.2×10^{-7} *4*
406.11 *21*	0.044[‡] *20*	1170.637	3/2$^+$	764.12	(3/2$^+$,5/2$^+$)	M1+E2		0.0187 *17*	α(K)exp=0.017 *14* (2003Sa62) α(K)=0.0159 *17*; α(L)=0.00225 *4*; α(M)=0.000463 *7*; α(N+..)=0.0001110 *18* α(N)=9.72×10^{-5} *14*; α(O)=1.32×10^{-5} *5*; α(P)=5.9×10^{-7} *9*
417.3 *3*	0.006[‡] *3*	496.08	9/2$^+$	78.738	7/2$^+$	M1+E2		0.0174 *17*	α(K)exp=0.015 *10* (2003Sa62) α(K)=0.0148 *17*; α(L)=0.00208 *4*; α(M)=0.000428 *7*; α(N+..)=0.0001026 *22* α(N)=8.98×10^{-5} *17*; α(O)=1.23×10^{-5} *5*; α(P)=5.5×10^{-7} *9*
423.69 *25*	0.0042[‡] *5*	919.59	(3/2$^+$,5/2$^+$)	496.08	9/2$^+$				
427.564 *13*	0.204 *2*	1047.670	3/2$^+$	620.120	1/2$^+$	M1,E2		0.0163 *17*	α(K)exp=0.0153 *16* α(K)=0.0139 *16*; α(L)=0.00194 *5*; α(M)=0.000399 *8*; α(N+..)=9.6×10^{-5} *3* α(N)=8.38×10^{-5} *20*; α(O)=1.14×10^{-5} *6*; α(P)=5.2×10^{-7} *9*

$^{131}_{55}Cs_{76}$-5

γ(^{131}Cs) (continued)

E_{γ}[†‡]	I_{γ}[@b]	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.[&]	δ[a]	α[c]	Comments
451.415 *16*	0.087 *2*	585.039	3/2+	133.623	5/2+	M1,E2		0.0141 *16*	α(K)exp=0.016 *3* α(K)=0.0120 *15*; α(L)=0.00166 *7*; α(M)=0.000341 *11*; α(N+..)=8.2×10^{-5} *4* α(N)=7.2×10^{-5} *3*; α(O)=9.8×10^{-6} *6*; α(P)=4.5×10^{-7} *8*
458.96 *10*	0.012[‡] *1*	1043.97	7/2+	585.039	3/2+	E2		0.01197	α(K)exp=0.010 *5* (2003Sa62) α(K)=0.01006 *14*; α(L)=0.001523 *22*; α(M)=0.000315 *5*; α(N+..)=7.49×10^{-5} *11* α(N)=6.58×10^{-5} *10*; α(O)=8.80×10^{-6} *13*; α(P)=3.59×10^{-7} *5*
461.250 *16*	0.12 *2*	585.039	3/2+	123.802	1/2+	M1,E2		0.0133 *16*	α(K)exp=0.013 *2* α(K)=0.0113 *15*; α(L)=0.00157 *7*; α(M)=0.000321 *13*; α(N+..)=7.7×10^{-5} *4* α(N)=6.8×10^{-5} *3*; α(O)=9.3×10^{-6} *6*; α(P)=4.2×10^{-7} *7*
462.68 *5*	0.10 *2*	1047.670	3/2+	585.039	3/2+	M1,E2		0.0132 *15*	α(K)exp=0.013 *2* α(K)=0.0112 *15*; α(L)=0.00155 *7*; α(M)=0.000319 *13*; α(N+..)=7.7×10^{-5} *4* α(N)=6.7×10^{-5} *3*; α(O)=9.2×10^{-6} *6*; α(P)=4.2×10^{-7} *7*
474.2[#] *2*	0.0050 *13*	1170.637	3/2+	696.471	3/2+				
480.399 *11*	0.704 *9*	696.471	3/2+	216.080	3/2+	M1+E2	+0.21 *3*	0.01326	α(K)exp=0.0096 *12* α(K)=0.01142 *17*; α(L)=0.001466 *21*; α(M)=0.000299 *5*; α(N+..)=7.25×10^{-5} *11* α(N)=6.33×10^{-5} *9*; α(O)=8.83×10^{-6} *13*; α(P)=4.40×10^{-7} *7*
486.507 *12*	4.47 *3*	620.120	1/2+	133.623	5/2+	E2		0.01016	α(K)exp=0.0094 *7* α(K)=0.00856 *12*; α(L)=0.001274 *18*; α(M)=0.000263 *4*; α(N+..)=6.27×10^{-5} *9* α(N)=5.50×10^{-5} *8*; α(O)=7.38×10^{-6} *11*; α(P)=3.07×10^{-7} *5* A_2=−0.52 *2*, A_4=−0.62 *9*,γ(lin pol) P_1(90°)=+0.47 *11* (1969Fe02).
496.321 *5*	100	620.120	1/2+	123.802	1/2+	M1		0.01234	α(K)exp=0.0100 *8* (2003Sa62) α(K)=0.01064 *15*; α(L)=0.001356 *19*; α(M)=0.000277 *4*; α(N+..)=6.71×10^{-5} *10* α(N)=5.85×10^{-5} *9*; α(O)=8.18×10^{-6} *12*; α(P)=4.11×10^{-7} *6* E_{γ}: weighted average of 496.321 *12* (1980VyZZ), 496.326 *13*, (1982KhZW), 496.30 *1* (1990Su07), 496.326 *5* (2003Sa62). Other: 496.280 *16* (1995Ku32). A_2=−0.001 *2*, A_4=+0.001 *3*, γ(lin pol) P_1(90°)=+0.012 *16* (1969Fe02).
506.1 *4*	0.004 *1*	585.039	3/2+	78.738	7/2+				
517.64 *7*	0.005 *2*	596.37	5/2+	78.738	7/2+				I_{γ}: average of 0.003 *1* (1990Su07) and 0.007 *2* (2003Sa62).
533.68[#] *17*	0.0030 *7*	657.61	7/2+	123.802	1/2+	M3		0.0895	α(K)exp=0.06 *2* (2003Sa62) α(K)=0.0743 *11*; α(L)=0.01206 *17*; α(M)=0.00253 *4*; α(N+..)=0.000611 *9* α(N)=0.000535 *8*; α(O)=7.32×10^{-5} *11*; α(P)=3.35×10^{-6} *5*

From ENSDF

γ(^{131}Cs) (continued)

E_γ[†‡]	I_γ[@b]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	α[c]	Comments
546.30 *8*	0.0075 *7*	919.59	(3/2+,5/2+)	373.246	3/2+			
550.46 *14*	0.0046 *11*	1170.637	3/2+	620.120	1/2+			
562.824 *23*	0.0079 *15*	696.471	3/2+	133.623	5/2+			
572.697 *25*	0.336 *6*	696.471	3/2+	123.802	1/2+	M1,E2	0.0076 *11*	α(K)exp=0.0058 *9* α(K)=0.0065 *10*; α(L)=0.00087 *8*; α(M)=0.000178 *16*; α(N+..)=4.3×10^{-5} *4* α(N)=3.8×10^{-5} *4*; α(O)=5.2×10^{-6} *6*; α(P)=2.4×10^{-7} *5*
585.031 *11*	2.55 *2*	585.039	3/2+	0.0	5/2+	M1,E2	0.0072 *11*	α(K)exp=0.0064 *7* α(K)=0.0062 *10*; α(L)=0.00082 *8*; α(M)=0.000168 *16*; α(N+..)=4.1×10^{-5} *4* α(N)=3.5×10^{-5} *4*; α(O)=4.9×10^{-6} *6*; α(P)=2.3×10^{-7} *5*
596.48 *13*	0.0037 *4*	596.37	5/2+	0.0	5/2+			
599.94 *11*	0.0034[‡] *4*	1257.83	7/2+	657.61	7/2+			
620.094[d] *7*	3.07 *2*	620.120	1/2+	0.0	5/2+	E2	0.00530	α(K)exp=0.0041 *5* α(K)=0.00450 *7*; α(L)=0.000632 *9*; α(M)=0.0001299 *19*; α(N+..)=3.11×10^{-5} *5* α(N)=2.73×10^{-5} *4*; α(O)=3.71×10^{-6} *6*; α(P)=1.642×10^{-7} *23* E_γ: poor fit, the level energy difference is equal to 620.119 *5*.
630.23 *17*	0.0078[‡] *9*	764.12	(3/2+,5/2+)	133.623	5/2+			
657.64[#] *10*	0.0074 *6*	657.61	7/2+	0.0	5/2+	[E2]	0.00456	α(K)=0.00389 *6*; α(L)=0.000539 *8*; α(M)=0.0001106 *16*; α(N+..)=2.65×10^{-5} *4* α(N)=2.32×10^{-5} *4*; α(O)=3.17×10^{-6} *5*; α(P)=1.421×10^{-7} *20*
661.60 *8*	0.014[‡] *2*	1257.83	7/2+	596.37	5/2+	E2	0.00454	α(K)exp=0.0041 *12* (2003Sa62) α=0.00454; α(K)=0.00384 *12*; α(L)=0.00053 *2*
674.418 *16*	0.283 *2*	1047.670	3/2+	373.246	3/2+	M1,E2	0.0051 *8*	α(K)exp=0.0040 *9* α(K)=0.0043 *7*; α(L)=0.00057 *7*; α(M)=0.000116 *14*; α(N+..)=2.8×10^{-5} *4* α(N)=2.5×10^{-5} *3*; α(O)=3.4×10^{-6} *5*; α(P)=1.6×10^{-7} *3*
696.467 *14*	0.317 *9*	696.471	3/2+	0.0	5/2+	M1,E2	0.0047 *8*	α(K)exp=0.0043 *10* α(K)=0.0040 *7*; α(L)=0.00053 *7*; α(M)=0.000107 *13*; α(N+..)=2.6×10^{-5} *4* α(N)=2.3×10^{-5} *3*; α(O)=3.1×10^{-6} *5*; α(P)=1.5×10^{-7} *3*
703.47 *7*	0.015 *1*	919.59	(3/2+,5/2+)	216.080	3/2+			
745.57 *6*	0.0027 *3*	1341.99	1/2,3/2	596.37	5/2+			
757.0 *2*	0.0010 *3*	1341.99	1/2,3/2	585.039	3/2+			E_γ,I_γ: from 1990Su07.
785.92 *9*	0.0050 *15*	919.59	(3/2+,5/2+)	133.623	5/2+			E_γ,I_γ: from 1990Su07.
795.85 *8*	0.0015 *2*	919.59	(3/2+,5/2+)	123.802	1/2+			
797.38 *6*	0.075 *3*	1170.637	3/2+	373.246	3/2+	M1,E2	0.0034 *6*	α(K)exp=0.0038 *5* α(K)=0.0029 *5*; α(L)=0.00038 *5*; α(M)=7.7×10^{-5} *10*; α(N+..)=1.86×10^{-5} *25* α(N)=1.62×10^{-5} *22*; α(O)=2.3×10^{-6} *4*; α(P)=1.10×10^{-7} *20*

γ(^{131}Cs) (continued)

E$_γ$[†‡]	I$_γ$[@b]	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.[&]	δ[a]	α[c]	Comments
827.79 *12*	0.0077[‡] *8*	1043.97	7/2$^+$	216.080	3/2$^+$				
831.583 *14*	0.488 *4*	1047.670	3/2$^+$	216.080	3/2$^+$	M1+E2	−0.31 +*21*−*46*	0.0035 *3*	α(K)exp=0.0031 *4* α(K)=0.00299 *25*; α(L)=0.00038 *3*; α(M)=7.7×10^{-5} *6*; α(N+..)=1.86×10^{-5} *13* α(N)=1.62×10^{-5} *12*; α(O)=2.27×10^{-6} *17*; α(P)=1.14×10^{-7} *11*
840.9 *4*	0.004 *2*	919.59	(3/2$^+$,5/2$^+$)	78.738	7/2$^+$				
884.58 *20*	0.0048[‡] *5*	1257.83	7/2$^+$	373.246	3/2$^+$				
914.035 *25*	0.099 *1*	1047.670	3/2$^+$	133.623	5/2$^+$	M1,E2		0.0025 *4*	α(K)exp=0.0026 *4* α(K)=0.0021 *4*; α(L)=0.00027 *4*; α(M)=5.5×10^{-5} *8*; α(N+..)=1.34×10^{-5} *19* α(N)=1.17×10^{-5} *16*; α(O)=1.63×10^{-6} *23*; α(P)=8.0×10^{-8} *14*
919.65 *9*	0.019 *1*	919.59	(3/2$^+$,5/2$^+$)	0.0	5/2$^+$				
923.866 *19*	1.55 *2*	1047.670	3/2$^+$	123.802	1/2$^+$	M1,E2		0.0024 *4*	α(K)exp=0.00193 *22* α(K)=0.0021 *4*; α(L)=0.00026 *4*; α(M)=5.4×10^{-5} *8*; α(N+..)=1.31×10^{-5} *18* α(N)=1.14×10^{-5} *16*; α(O)=1.59×10^{-6} *23*; α(P)=7.8×10^{-8} *14*
954.61 *3*	0.069 *1*	1170.637	3/2$^+$	216.080	3/2$^+$	M1,E2		0.0022 *4*	α(K)exp=0.0013 *4* (1990Su07) α(K)=0.0019 *3*; α(L)=0.00025 *4*; α(M)=5.0×10^{-5} *7*; α(N+..)=1.21×10^{-5} *17* α(N)=1.06×10^{-5} *15*; α(O)=1.47×10^{-6} *21*; α(P)=7.3×10^{-8} *13*
968.887 *21*	0.078 *3*	1047.670	3/2$^+$	78.738	7/2$^+$	E2		0.00184	α(K)exp=0.0018 *3* α(K)=0.001578 *22*; α(L)=0.000205 *3*; α(M)=4.19×10^{-5} *6*; α(N+..)=1.012×10^{-5} *15* α(N)=8.84×10^{-6} *13*; α(O)=1.222×10^{-6} *18*; α(P)=5.84×10^{-8} *9*
1037.0[#] *4*	0.0010 *3*	1170.637	3/2$^+$	133.623	5/2$^+$				
1046.4[#] *3*	0.193 *15*	1170.637	3/2$^+$	123.802	1/2$^+$				
1047.601[d] *11*	2.80 *7*	1047.670	3/2$^+$	0.0	5/2$^+$	M1,E2		0.0018 *3*	α(K)exp=0.0019 *3* α(K)=0.00157 *24*; α(L)=0.00020 *3*; α(M)=4.0×10^{-5} *6*; α(N+..)=9.8×10^{-6} *13* α(N)=8.5×10^{-6} *12*; α(O)=1.19×10^{-6} *17*; α(P)=5.9×10^{-8} *10* E$_γ$: poor fit, the level energy difference is equal to 1047.665 *7*.
1125.97 *9*	0.0057 *10*	1341.99	1/2,3/2	216.080	3/2$^+$				
1170.52 *5*	0.0034 *5*	1170.637	3/2$^+$	0.0	5/2$^+$				I$_γ$: from 1990Su07, other: RI=0.060 *2* (1995Ku32).

From ENSDF

γ(^{131}Cs) (continued)

E_γ [†‡]	I_γ [@b]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1208.47 *11*	0.0037 *4*	1341.99	1/2,3/2	133.623	5/2$^+$	
1218.30[#] *15*	0.0010 *3*	1341.99	1/2,3/2	123.802	1/2$^+$	E_γ,I_γ: from 1990Su07.
1341.98 *8*	0.0023 *3*	1341.99	1/2,3/2	0.0	5/2$^+$	

† Weighted average from 1976Ge14 (corrected by 1982KhZW), 1980VyZZ, 1990Su07, 1995Ku32 and 2003Sa62 when it is possible besides as noted.
‡ Reported by 2003Sa62 only.
\# From 1990Su07.
@ Averaged from 1976Ge14, 1980VyZZ, 1988Ch44, 1990Me15, 1990Su07, 1995Ku32 besides as noted.
& From α(exp) and δ.
a From γγ(θ), except as noted.
b For absolute intensity per 100 decays, multiply by 0.480 *4*.
c Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
d Placement of transition in the level scheme is uncertain.

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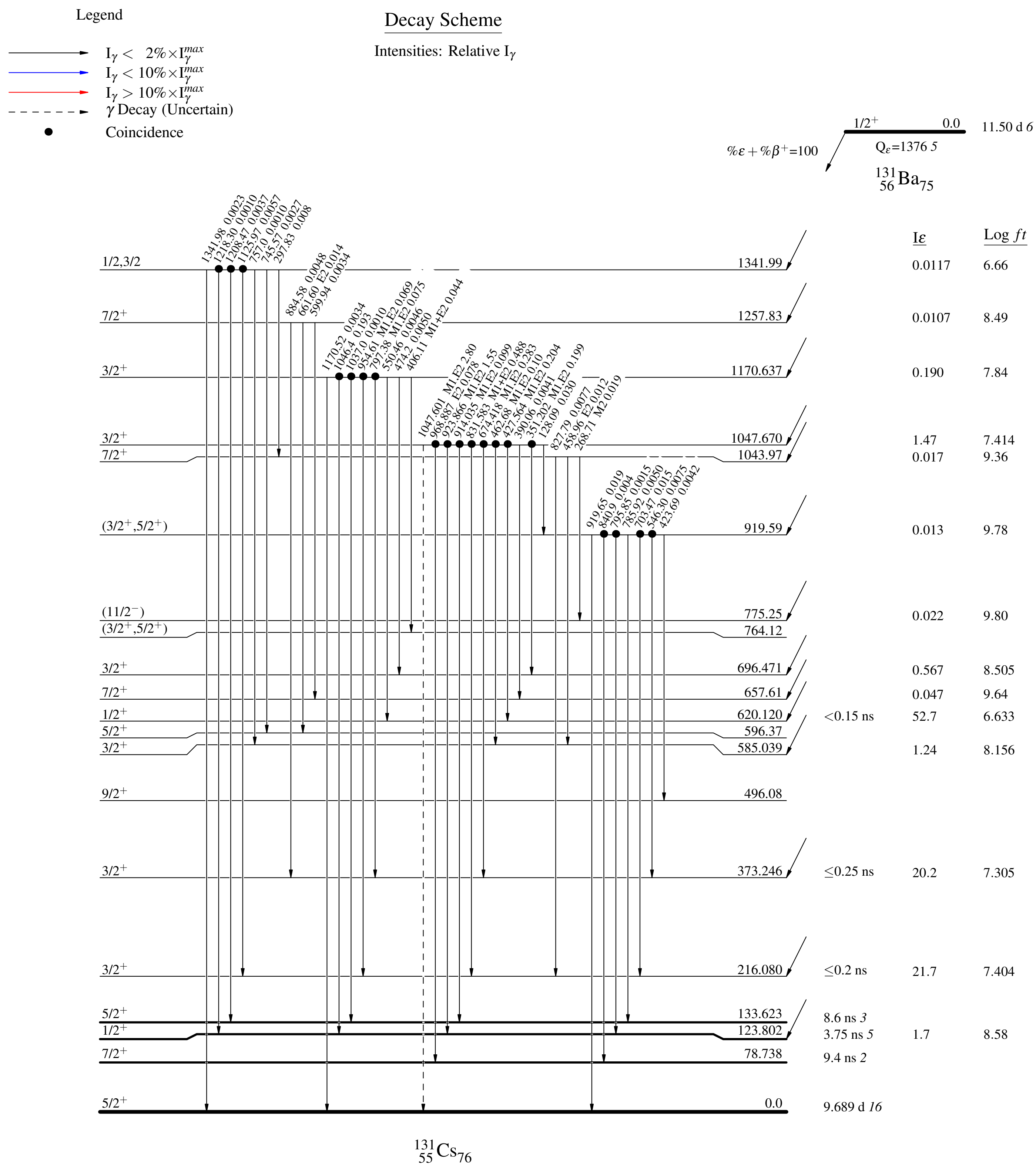
^{131}Ba ε decay 2003Sa62,1990Su07



^{131}Ba ε decay 2003Sa62,1990Su07

Decay Scheme (continued)

Intensities: Relative I_γ