Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

Q(β⁻)=−5.63×10³ *3*; S(n)=10270 *11*; S(p)=7051 *6*; Q(α)=−541 *5* 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β⁻): from βγ coin (1998Ko66). Systematics value=5698 *205* (1995Au04).
Q(β⁻)=−5666 *70*; S(n)=10273 *11*; S(p)=7059 *8*; Q(α)=−523 *9* 1995Au04
^{130}Ba(n,n) E=0.0005-132 eV: 1985Ko23.
Isotope shift, hyperfine structure measurements: 1988Ya13, 1988Va11, 1987Va16, 1987Al25, 1985Si24, 1984We15, 1982Gr14, 1981Wa19, 1980Si14, 1977No04.
Additional information 1.

^{130}Ba Levels

Band assignments are from 1985Su03 and 2000St07.

Cross Reference (XREF) Flags

A	^{130}Cs β⁻ decay (29.21 min)	D	^{120}Sn(^{13}C,3nγ),^{116}Cd(^{18}O,4nγ)
B	^{130}Ba IT decay (9.4 ms)	E	^{130}Ba(α,α′)
C	^{130}La ε decay (8.7 min)	F	Coulomb excitation

E(level)	Jπ	T1/2[†]	XREF	Comments
0.0[‡]	0⁺	stable	ABCDEF	T1/2(^{130}Ba 2β,neutrinoless decay) limit measured: 1998Be68. Δ<r²>(^{130}Ba−^{138}Ba)=0.091 fm² *16* (1982Gr14), 0.086 fm² *33* (1979Be25,1977No04).
357.38[‡] *8*	2⁺	41.8 ps *12*	BCDEF	μ=+0.70 *6* (1989Ra17,1980Br01) B(E2)↑=1.163 *11* g=0.35 *3* (1980Br01) Q=−1.02 *16*; Q=−0.09 *16* (1989Bu07) B(E2)↑: from Coulomb excitation. μ: transient-field integral PAC (1980Br01). Q: reorientation method. −1.02 *16* (constructive), −0.09 *16* (destructive) (1989Bu07) assuming that γ from second 2⁺ to first 2⁺ is predominantly E2. Others: −0.33 *24* (1974Ne15), +0.37 *18* (destructive) (1973ToXW), −1.10 *34* (1967Si03). T1/2: weighted average of 43.2 ps *5* (RDDS in (^{18}O,4nγ)) and 40.7 ps *4* (from B(E2)=1.163 *11* in Coul. ex.). Jπ: ΔJ=2, E2 γ to 0⁺.
888.89 *22*			D	
901.85[‡] *10*	4⁺	3.83 ps *6*	BCD	Jπ: ΔJ=2, E2 γ to 2⁺.
908.02[b] *8*	2⁺		BCD	Jπ: ΔJ=2 γ to 0⁺.
1179.5 *2*	0⁺		C	Jπ: γγ(θ); γ to 2⁺.
1361.06[b] *9*	3⁽⁺⁾		BCD	Jπ: ΔJ=1, D+Q γ′s to 2⁺ and 4⁺.
1477.53[b] *9*	(4⁺)		CD	Jπ: ΔJ=2 γ to 2⁺; γ to 4⁺.
1544.4 *3*			D	
1557.55 *10*	2⁺		C	Jπ: γγ(θ); γ′s to 4⁺ and 0⁺.
1592.84[‡] *16*	6⁺	0.98 ps *6*	BCD	Jπ: ΔJ=2, E2 γ to 4⁺.
1844.65 *11*	4⁺		C	Jπ: γγ(θ); γ to 2⁺.
1882.97 *10*	2⁺		C	Jπ: γγ(θ); γ′s to 0⁺ and 4⁺.
1918.6 *2*	3		C	Jπ: γγ(θ).
1948 *5*	(3⁻)		E	Jπ: systematic trend of 3⁻ states in ^{132}Ba (at 2070), ^{134}Ba(at 2251), ^{136}Ba (at

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Adopted Levels, Gammas (continued)

^{130}Ba Levels (continued)

E(level)	J^π	$T_{1/2}$[†]	XREF	Comments
				2529) and ^{138}Ba (at 2879).
2012.57[b] *15*	5^+		B D	J^π: E3 γ from 8^-, γ to 4^+.
2053.7 *3*	$(3,4^+)$		C	J^π: $\gamma\gamma(\theta)$; γ's to 2^+ and 4^+.
2079.18 *9*	$3^{(+)}$		C	J^π: $\gamma\gamma(\theta)$; log *ft*=5.9 from $3^{(+)}$.
2101.16[b] *15*	(6^+)		D	J^π: $\Delta J=2$ γ to 4^+.
2168.39[&] *17*	(5^-)		CD	J^π: $\Delta J=1$ γ to 4^+; γ to 6^+.
2182.9 *3*			D	
2229.9 *4*			D	J^π: γ to 6^+.
2248.17 *14*	$(3,4^+)$		C	J^π: $\gamma\gamma(\theta)$; γ's to 2^+ and 4^+.
2269.2 *2*			C	J^π: γ to 2^+.
2279.5 *2*			C	J^π: γ to 4^+.
2317.99 *18*	$(3,4^+)$		C	J^π: $\gamma\gamma(\theta)$; γ's to 2^+ and 4^+.
2346.87 *10*	$3^{(+)}$		C	J^π: $\gamma\gamma(\theta)$; log *ft*=5.9 from $3^{(+)}$.
2395.05[‡] *18*	8^+	0.49 ps *14*	B D	J^π: $\Delta J=2$, E2 γ to 6^+.
2407.8 *4*			C	J^π: γ to 4^+.
2433.8 *4*			C	J^π: γ to 4^+.
2475.12 *18*	8^-	9.4 ms *4*	B D	%IT=100 J^π: M2+E3 γ to 6^+, E1 γ to 8^+. $T_{1/2}$: weighted average of 9.54 ms *14* (1999DeZZ), 13.5 ms *10* (1969WaZX) and 8.8 ms *2* (1966Br14). Additional information 2.
2557.1 *3*			C	J^π: γ to 2^+.
2568.17[&] *17*	(7^-)	4.16 ps *14*	D	J^π: $\Delta J=1$, E1 γ to 6^+; $\Delta J=2$, E2 γ to (5^-).
2602.1 *3*			C	J^π: γ to 2^+.
2645.76 *16*	$3^{(+)}$		C	J^π: $\gamma\gamma(\theta)$; log *ft*=6.0 from $3^{(+)}$.
2733.7 *4*	$(1,2^+)$		C	J^π: γ to 0^+.
2784.0 *2*	$(3,4^+)$		C	J^π: $\gamma\gamma(\theta)$; γ to 2^+.
2799.79[b] *22*	(8^+)		D	J^π: $\Delta J=(2)$ γ to (6^+).
2891.2 *2*	(1 to 4)		C	J^π: γ's to 3^+ and 2^+.
2928.1 *4*			D	
2928.86[a] *23*	(8^-)		D	J^π: $\Delta J=1$ γ to (7^-).
2935.4 *4*			C	J^π: γ to 4^+.
3066.92[&] *21*	(9^-)	5.27 ps *14*	D	J^π: $\Delta J=2$, E2 γ to (7^-); $\Delta J=1$ γ to 8^+.
3259.85[‡] *24*	10^+	0.55 ps *7*	D	J^π: $\Delta J=2$, E2 γ to 8^+.
3265.26? *24*			C	J^π: γ to 4^+.
3289.9 *4*			D	
3422.85[#] *24*	(10^+)		D	J^π: $\Delta J=(2)$ γ to 8^+; possible γ to 10^+.
3434.94[a] *24*	(10^-)		D	J^π: $\Delta J=2$ γ to (8^-); $\Delta J=1$ γ to (9^-).
3602.52[b] *23*	(10^+)		D	J^π: $\Delta J=(2)$ γ to 8^+.
3658.9[&] *3*	(11^-)	2.10 ps *9*	D	J^π: $\Delta J=2$, E2 γ to (9^-).
3660.02 *23*	$(2^+,3,4^+)$		C	J^π: γ's to 2^+ and 4^+.
3676.2 *4*			C	J^π: γ to $(3^+,4^+)$.
3704.7 *4*	$(2^+,3,4^+)$		C	J^π: γ's to 2^+ and 4^+.
3712.0 *4*			C	J^π: γ to 4^+.
3789.7[@] *3*	(10^+)		D	J^π: $\Delta J=(0)$ γ to 10^+.
3798.7 *3*			C	J^π: γ to 3^+.
3962.6 *4*			D	J^π: γ to 10^+.
3989.6[#] *3*	$(12)^+$	2.15 ps *21*	D	J^π: $\Delta J=2$, E2 γ to 10^+.
4006.8 *4*			C	J^π: γ to (3,4).
4077.9[a] *3*	(12^-)		D	J^π: $\Delta J=(2)$ γ to (10^-); γ to (11^-).
4222.3[‡] *4*	(12^+)		D	J^π: $\Delta J=2$ γ to 10^+.

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Adopted Levels, Gammas (continued)

^{130}Ba Levels (continued)

E(level)	J^π	$T_{1/2}$ [†]	XREF	Comments
4256.1[@] *3*	(12$^+$)	1.52 ps *14*	D	J^π: ΔJ=(2) γ to 10$^+$.
4354.0[&] *4*	(13$^-$)		D	J^π: ΔJ=(2) γ to (11$^-$).
4404.1 *4*			D	J^π: γ to 10$^+$.
4783.3[#] *4*	(14$^+$)	0.41 ps *4*	D	J^π: ΔJ=(2) γ to (12)$^+$. $T_{1/2}$: effective half-life.
4879.3[a] *4*	(14$^-$)		D	J^π: ΔJ=(2) γ to (12$^-$).
4885.3[@] *4*	(14$^+$)	3.4 ps *6*	D	J^π: ΔJ=2, E2 γ to (12$^+$). $T_{1/2}$: effective half-life.
5155.4[&] *4*	(15$^-$)		D	J^π: ΔJ=(2) γ to (13$^-$).
5679.5[@] *4*	(16$^+$)		D	J^π: γ to (14$^+$).
5730.1[#] *4*	(16$^+$)		D	J^π: ΔJ=(2) γ to (14$^+$).
5766.6[a] *4*	(16$^-$)		D	J^π: γ to (14$^-$).
6037.2[&] *5*	(17$^-$)		D	J^π: γ to (15$^-$).
6757.4[#] *5*	(18$^+$)		D	J^π: γ to (16$^+$).
6972.8[&] *6*			D	J^π: γ to (17$^-$).
8022.8[&] *6*			D	

[†] From recoil-distance Doppler shift in (^{18}O,4nγ) (2000St07).
[‡] Band(A): g.s. band.
[#] Band(B): first S (super) band.
[@] Band(C): second S (super) band.
[&] Band(D): π=−,α=1.
[a] Band(E): π=−, α=0.
[b] Band(F): quasi γ-band.

γ(^{130}Ba)

δ(Q/D) given in comments are from γγ(θ) data.

E_i(level)	J^π_i	E_γ [†]	I_γ [†]	E_f	J^π_f	Mult. [‡]	α [#]	Comments
357.38	2$^+$	357.4 *1*	100	0.0	0$^+$	E2	0.0262	α(K)=0.02163; α(L)=0.00365; α(M)=0.00076; α(N+..)=0.00020 B(E2)(W.u.)=57.9 *17*
888.89		531.5 *2*	100	357.38	2$^+$			
901.85	4$^+$	544.5 *1*	100	357.38	2$^+$	E2		B(E2)(W.u.)=78.9 *13*
908.02	2$^+$	550.7 *1*	100 *6*	357.38	2$^+$			δ(Q/D)=−0.296 *7* or −40 *13*.
		908.0 *1*	66 *3*	0.0	0$^+$			
1179.5	0$^+$	271.4 *3*		908.02	2$^+$			
		822.0 *3*		357.38	2$^+$			
1361.06	3$^{(+)}$	453.2 *1*	49 *2*	908.02	2$^+$	D+Q		δ(Q/D)=+0.31 *2* or +13 *3*.
		459.4 *4*	9.3 *2*	901.85	4$^+$			δ(Q/D)=−0.20 *7* or −2.5 *5*.
		1003.6 *1*	100 *3*	357.38	2$^+$	D+Q		δ(Q/D)=−0.001 *9* or −4.6 *2*.
1477.53	(4$^+$)	569.4 *1*	100 *11*	908.02	2$^+$			
		575.5 *2*	71 *9*	901.85	4$^+$			δ(Q/D)=−0.43 *8* or +2.4 *5*.
		1120.2 *1*	66 *6*	357.38	2$^+$			
1544.4		655.5 *2*	100	888.89				

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Adopted Levels, Gammas (continued)

$\gamma(^{130}Ba)$ (continued)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.‡	Comments
1557.55	2+	196.2	6.9 *11*	1361.06	3(+)		
		377.7 *3*		1179.5	0+		
		649.6 *1*	53 *6*	908.02	2+		δ(Q/D)=−0.01 *3* or +3.2 *4*.
		655.6	7.2 *11*	901.85	4+		
		1200.1 *1*	100 *8*	357.38	2+		δ(Q/D)=−0.31 *2* or −23 *9*.
		1557.1 *3*	<8	0.0	0+		
1592.84	6+	691.1 *2*	100	901.85	4+	E2	B(E2)(W.u.)=94 *6*
1844.65	4+	367.1 *3*	42 *17*	1477.53	(4+)		δ(Q/D)=−1.0 *8* or +213 *167*.
		483.7 *3*	83 *17*	1361.06	3(+)		
		936.6 *2*	83 *17*	908.02	2+		
		942.8 *1*	100 *8*	901.85	4+		δ(Q/D)=+0.16 *13* or +0.8 *2*.
		1487.3 *2*	78 *5*	357.38	2+		
1882.97	2+	325.5 *3*		1557.55	2+		
		521.8 *5*	≈10	1361.06	3(+)		
		703.3 *3*	5.3 *8*	1179.5	0+		
		974.9 *1*	48 *3*	908.02	2+		δ(Q/D)=−0.25 *3* or +45 *6*.
		981.0 *3*		901.85	4+		
		1525.7 *1*	100 *8*	357.38	2+		δ(Q/D)=+0.029 *12* or +2.8 *2*.
		1882.5 *3*		0.0	0+		
1918.6	3	1010.5 *3*		908.02	2+		
		1016.7 *3*		901.85	4+		δ(Q/D)=−0.4 *2* or −1.6 *7*.
		1561.2 *3*		357.38	2+		δ(Q/D)=+0.04 *8* or −6 *3*.
2012.57	5+	420.3 *5*	≈70	1592.84	6+		
		651.5 *2*	100 *11*	1361.06	3(+)		
		1110.4 *2*	94 *11*	901.85	4+		
2053.7	(3,4+)	496.3 *3*		1557.55	2+		
		576.2 *5*	≈70	1477.53	(4+)		
		692.8 *7*	91 *12*	1361.06	3(+)		
		1151.8 *3*	100 *12*	901.85	4+		
		1695.8 *3*	121 *19*	357.38	2+		
2079.18	3(+)	196.1 *3*		1882.97	2+		
		234.5 *3*	3.0 *9*	1844.65	4+		
		521.8 *5*	≈11	1557.55	2+		δ(Q/D)=−0.8 *4*.
		601.5 *4*	9 *4*	1477.53	(4+)		
		718.2 *1*	74 *4*	1361.06	3(+)		
		1171.1 *1*	100 *4*	908.02	2+		δ(Q/D)=+0.008 *25* or −4.8 *6*.
		1177.4 *1*	59 *2*	901.85	4+		δ(Q/D)=−0.34 *7* or −1.8 *3*.
		1721.7 *1*	50 *4*	357.38	2+		δ(Q/D)=+0.10 *2* or −8.4 *14*.
2101.16	(6+)	623.8 *2*	100 *5*	1477.53	(4+)		
		1199.3 *2*	43 *5*	901.85	4+		
2168.39	(5−)	575.5 *2*	32 *11*	1592.84	6+		
		1266.6 *2*	100 *6*	901.85	4+		
2182.9		590.1 *2*	100	1592.84	6+		
2229.9		685.5 *2*	100	1544.4			
2248.17	(3,4+)	1340.2 *3*		908.02	2+		
		1346.3 *1*		901.85	4+		
		1890.5 *3*		357.38	2+		
2269.2		1361.1 *3*		908.02	2+		
		1911.6 *3*		357.38	2+		
2279.5		360.8 *3*		1918.6	3		
		1377.7 *3*		901.85	4+		
2317.99	(3,4+)	264.1 *3*		2053.7	(3,4+)		
		473.4 *3*		1844.65	4+		
		840.1 *3*	58 *10*	1477.53	(4+)		
		957.0 *3*	100 *20*	1361.06	3(+)		

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Adopted Levels, Gammas (continued)

$\gamma(^{130}Ba)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ	α[#]	Comments
2317.99	(3,4$^+$)	1410.7 *4*	100 *20*	908.02	2$^+$				
		1415.9[@]	22 *10*	901.85	4$^+$				
2346.87	3$^{(+)}$	267.7 *1*	21 *7*	2079.18	3$^{(+)}$				
		427.9 *3*		1918.6	3				
		464.2 *2*	36 *11*	1882.97	2$^+$				
		502.2 *5*	8.9 *18*	1844.65	4$^+$				
		789.2 *3*	15 *2*	1557.55	2$^+$				
		869.3 *1*	71 *4*	1477.53	(4$^+$)				δ(Q/D)=+0.47 *11* or +3.8 *14*.
		986.4 *10*	11 *4*	1361.06	3$^{(+)}$				
		1438.8 *1*	100 *7*	908.02	2$^+$				δ(Q/D)=+0.63 *7* or +3.0 *5*.
		1445.0 *2*	39 *4*	901.85	4$^+$				δ(Q/D)=+1.1 *17*.
2395.05	8$^+$	802.3 *2*	100	1592.84	6$^+$	E2			B(E2)(W.u.)=9.E+1 *3*
2407.8		930.3 *3*		1477.53	(4$^+$)				
2433.8		589.2 *3*		1844.65	4$^+$				
2475.12	8$^-$	80.3 *2*	10 *1*	2395.05	8$^+$	E1		0.419	α(K)= 0.357; α(L)= 0.0495; α(M)=0.01009; α(N+..)=0.00259 B(E1)(W.u.)=4.0×10^{-12} *5*
		462.3 *2*	20 *2*	2012.57	5$^+$	E3		0.0363	α(K)= 0.0283; α(L)=0.00630; α(M)=0.00135; α(N+..)=0.00036 B(E3)(W.u.)=0.0042 *6*
		882.3 *2*	100 *7*	1592.84	6$^+$	M2+E3	1.1 *6*		B(M2)(W.u.)=8.E−8 *5*; B(E3)(W.u.)=0.00013 *7* δ: from α(K)exp in ^{130}Ba IT decay.
2557.1		1649.1 *3*	100	908.02	2$^+$				
2568.17	(7$^-$)	399.8 *2*	50 *2*	2168.39	(5$^-$)	E2			B(E2)(W.u.)=110 *7*
		467.1 *2*	5 *3*	2101.16	(6$^+$)	[E1]			B(E1)(W.u.)=2.0×10^{-5} *12*
		975.3 *2*	100 *2*	1592.84	6$^+$	E1			B(E1)(W.u.)=4.41×10^{-5} *21*
2602.1		1694.1 *3*		908.02	2$^+$				
2645.76	3$^{(+)}$	298.7 *3*		2346.87	3$^{(+)}$				
		327.9 *3*	≈70	2317.99	(3,4$^+$)				
		376.2 *3*		2269.2					
		397.6 *6*	60 *30*	2248.17	(3,4$^+$)				
		566.4 *3*		2079.18	3$^{(+)}$				
		592.1 *4*	50 *10*	2053.7	(3,4$^+$)				
		726.9 *3*		1918.6	3				
		801.2 *2*	100 *30*	1844.65	4$^+$				δ(Q/D)=−0.2 *2* or −2.4 *13*.
		1088.0 *3*		1557.55	2$^+$				
		1167.8 *3*		1477.53	(4$^+$)				
		1744.0 *3*	60 *10*	901.85	4$^+$				δ(Q/D)=+0.37 *7* or +4.2 *11*.
		2287.9 *3*	70 *10*	357.38	2$^+$				δ(Q/D)=+0.07 *5* or −6.9 *23*.
2733.7	(1,2$^+$)	1554.2 *3*		1179.5	0$^+$				
2784.0	(3,4$^+$)	437.2 *3*		2346.87	3$^{(+)}$				
		1306.3 *3*		1477.53	(4$^+$)				
		1882.0 *3*		901.85	4$^+$				
		2426.9 *3*		357.38	2$^+$				
2799.79	(8$^+$)	698.7 *2*	100	2101.16	(6$^+$)				
2891.2	(1 to 4)	1333.7 *3*		1557.55	2$^+$				
		1530.2 *3*		1361.06	3$^{(+)}$				
2928.1		745.2 *2*	100	2182.9					
2928.86	(8$^-$)	360.7 *2*	100	2568.17	(7$^-$)				
2935.4		1090.8 *3*		1844.65	4$^+$				
3066.92	(9$^-$)	498.8 *2*	100 *11*	2568.17	(7$^-$)	E2			B(E2)(W.u.)=81 *13*
		671.8 *2*	9.7 *11*	2395.05	8$^+$				
3259.85	10$^+$	864.8 *2*	100	2395.05	8$^+$	E2			B(E2)(W.u.)=54 *7*
3265.26?		1017.0 *3*	100 *30*	2248.17	(3,4$^+$)				

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Adopted Levels, Gammas (continued)

$\gamma(^{130}Ba)$ (continued)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.‡	Comments
3265.26?		1787.8 *3*	71 *14*	1477.53	(4$^+$)		
3289.9		1107.0 *2*	100	2182.9			
3422.85	(10$^+$)	163.0 *2*	<5	3259.85	10$^+$		
		1027.8 *2*	100 *12*	2395.05	8$^+$		
3434.94	(10$^-$)	368.0 *2*	53 *7*	3066.92	(9$^-$)		
		506.1 *2*	100 *5*	2928.86	(8$^-$)		
3602.52	(10$^+$)	802.8 *2*	100 *30*	2799.79	(8$^+$)		
		1207.4 *2*	73 *7*	2395.05	8$^+$		
3658.9	(11$^-$)	592.0 *2*	100	3066.92	(9$^-$)	E2	B(E2)(W.u.)=95 *4*
3660.02	(2$^+$,3,4$^+$)	2182.5 *5*	25 *8*	1477.53	(4$^+$)		
		2752.1 *3*	100 *8*	908.02	2$^+$		
		2757.9 *4*	50 *8*	901.85	4$^+$		
3676.2		1622.6 *3*		2053.7	(3,4$^+$)		
3704.7	(2$^+$,3,4$^+$)	2796.7 *4*	100 *13*	908.02	2$^+$		
		2802.8 *12*	19 *6*	901.85	4$^+$		
3712.0		2810.1 *3*	100	901.85	4$^+$		
3789.7	(10$^+$)	529.8 *2*	100	3259.85	10$^+$		
3798.7		1529.5 *3*		2269.2			
		2437.8 *3*		1361.06	3$^{(+)}$		
3962.6		539.7 *2*	100	3422.85	(10$^+$)		
3989.6	(12)$^+$	566.7 *2*	26 *8*	3422.85	(10$^+$)	[E2]	B(E2)(W.u.)=24 *8*
		729.7 *2*	100 *5*	3259.85	10$^+$	E2	B(E2)(W.u.)=26 *4*
4006.8		1222.8 *3*		2784.0	(3,4$^+$)		
4077.9	(12$^-$)	419.0 *2*	26 *9*	3658.9	(11$^-$)		
		643.0 *2*	100 *4*	3434.94	(10$^-$)		
4222.3	(12$^+$)	962.4 *2*	100	3259.85	10$^+$	Q	
4256.1	(12$^+$)	466.4 *2*	45 *20*	3789.7	(10$^+$)	[E2]	B(E2)(W.u.)=1.3×10^2 *7*
		996.2 *2*	100 *5*	3259.85	10$^+$	[E2]	B(E2)(W.u.)=6.7 *12*
4354.0	(13$^-$)	695.1 *2*	100	3658.9	(11$^-$)	(Q)	
4404.1		981.2 *2*	100	3422.85	(10$^+$)		
4783.3	(14$^+$)	793.7 *2*	100	3989.6	(12)$^+$	[E2]	B(E2)(W.u.)=112 *11*
4879.3	(14$^-$)	801.4 *2*	100	4077.9	(12$^-$)		
4885.3	(14$^+$)	629.2 *2*	100	4256.1	(12$^+$)	E2	B(E2)(W.u.)=43 *8*
5155.4	(15$^-$)	801.4 *2*	100	4354.0	(13$^-$)	(Q)	
5679.5	(16$^+$)	794.2 *2*	100	4885.3	(14$^+$)		
5730.1	(16$^+$)	946.8 *2*	100	4783.3	(14$^+$)		
5766.6	(16$^-$)	887.3 *2*	100	4879.3	(14$^-$)		
6037.2	(17$^-$)	881.8 *2*	100	5155.4	(15$^-$)		
6757.4	(18$^+$)	1027.3 *2*	100	5730.1	(16$^+$)		
6972.8		936.0 *2*		6037.2	(17$^-$)		
8022.8		1050.0 *2*		6972.8			

† For levels populated in ^{130}La ε decay, ^{130}Ba IT decay and in ^{120}Sn(^{13}C,3nγ), the values are generally taken from ^{130}La ε decay.

‡ From ce and $\gamma(\theta)$ data in ^{120}Sn(^{13}C,3nγ),^{116}Cd(^{18}O,4nγ), except for the 8$^-$ isomer at 2475, for which the assignments are from ce data in ^{130}Ba IT decay.

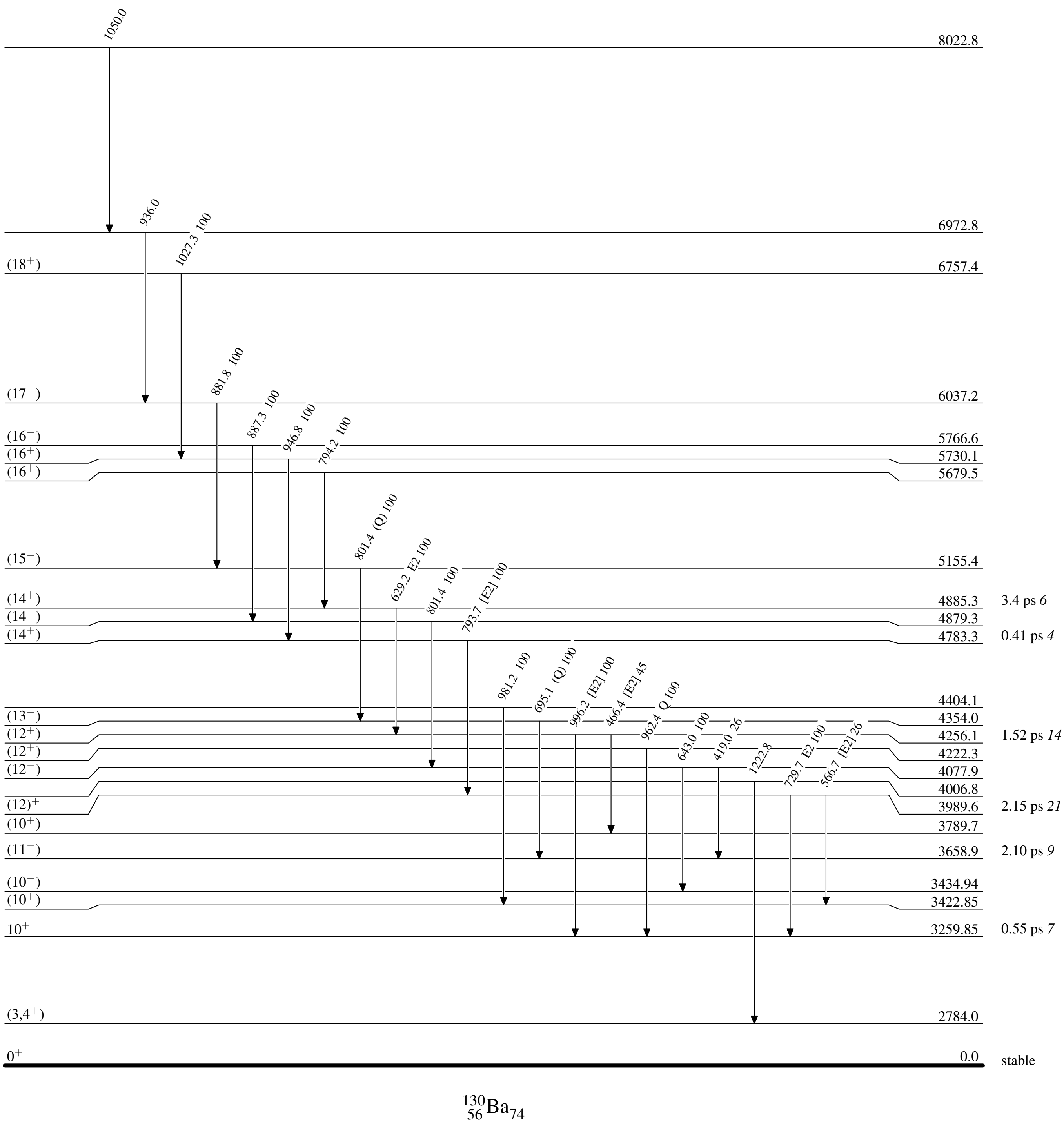
Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

@ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

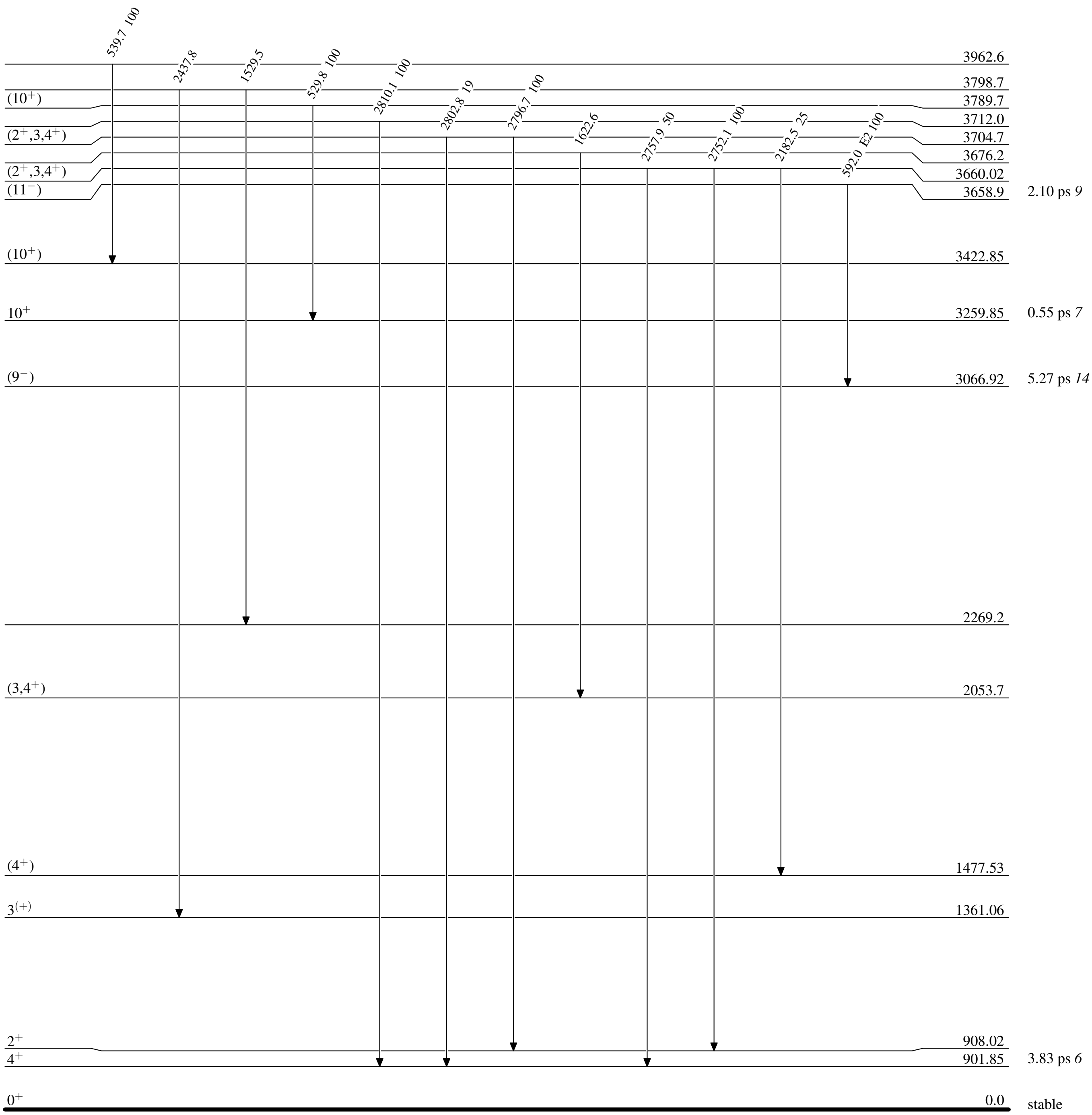
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

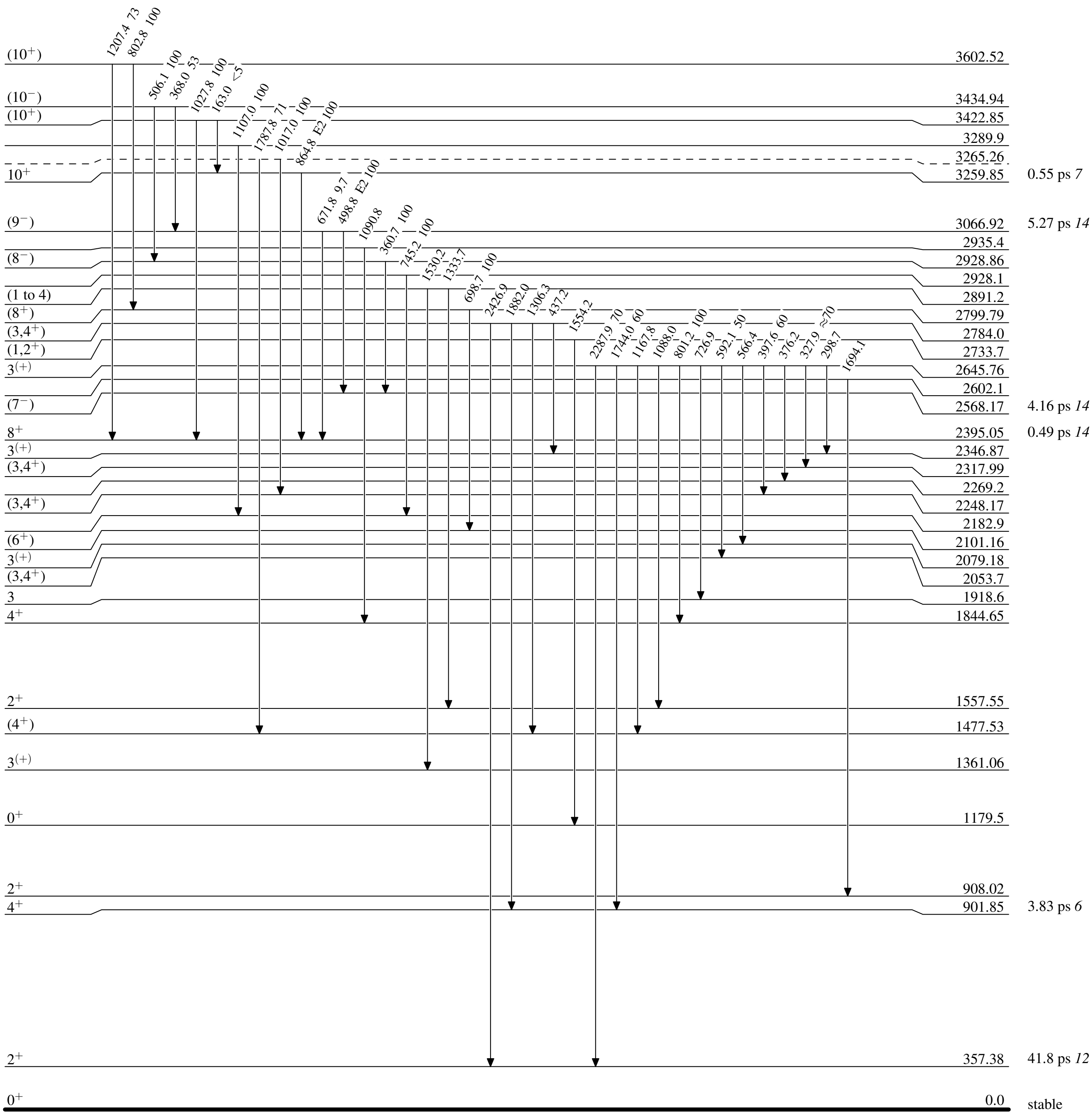


$^{130}_{56}Ba_{74}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

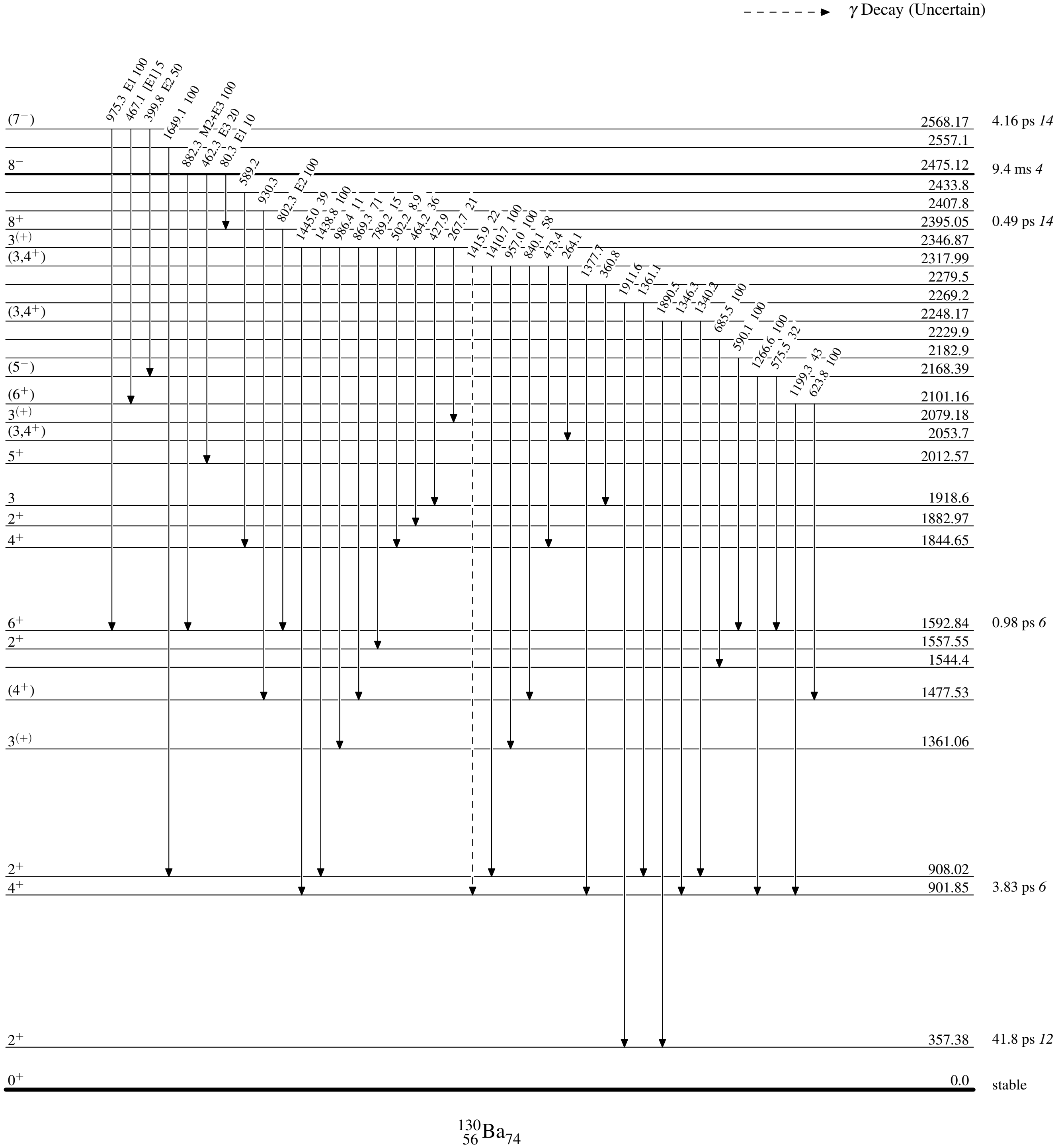


$^{130}_{56}Ba_{74}$

Adopted Levels, Gammas

Level Scheme (continued)

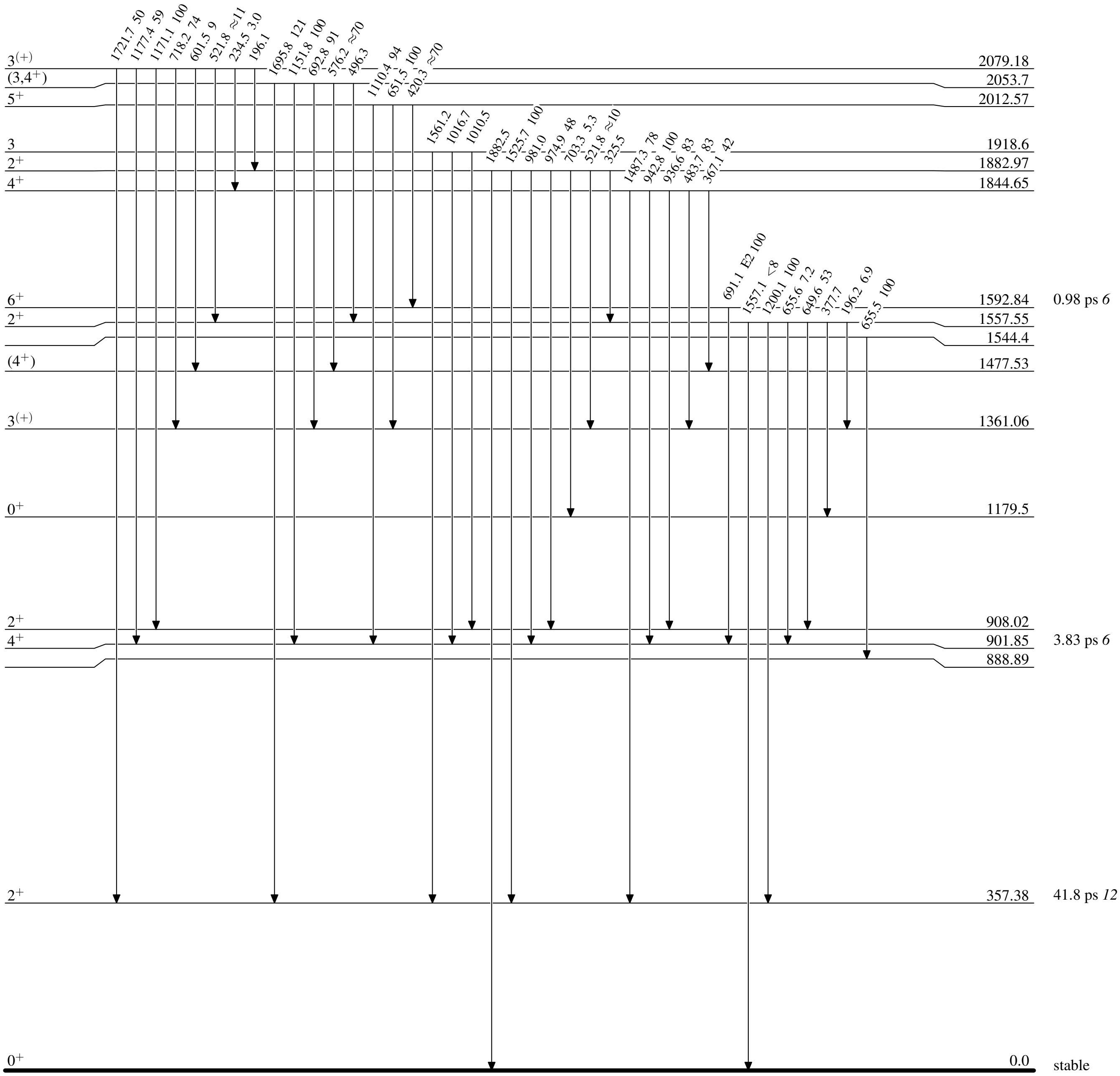
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

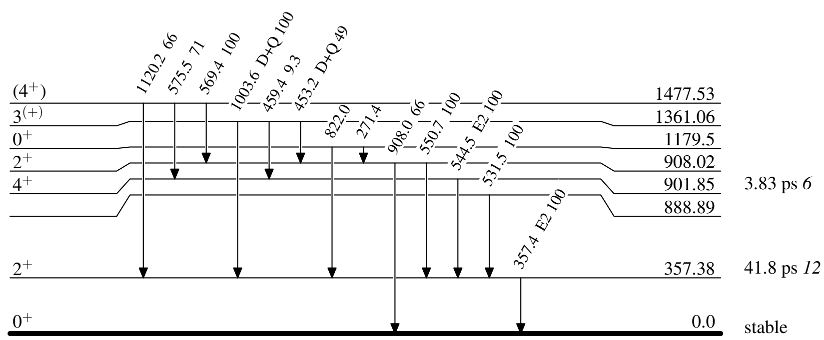


$^{130}_{56}Ba_{74}$

Adopted Levels, Gammas

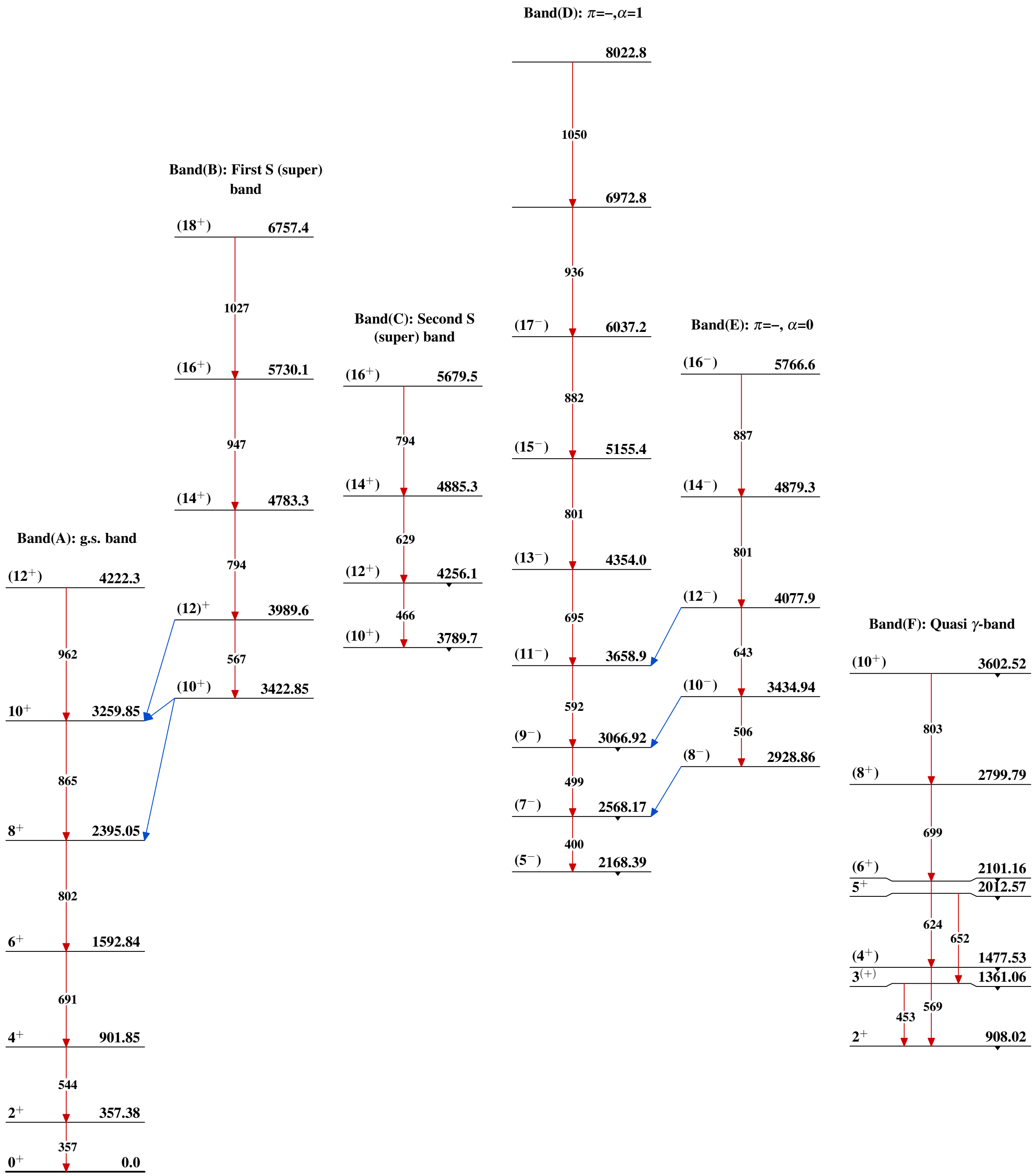
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{130}_{56}Ba_{74}$

Adopted Levels, Gammas



$^{130}_{56}Ba_{74}$

^{130}Cs β^- decay (29.21 min) 1952Sm41,1981Ha09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

Parent: ^{130}Cs: E=0.0; $J^\pi=1^+$; $T_{1/2}$=29.21 min *4*; $Q(\beta^-)$=369 *11*; $\%\beta^-$ decay=1.6 *2*
^{130}Cs-$T_{1/2}$: $T_{1/2}$=29.21 min *4* (1981Ha09).
^{130}Cs-$\%\beta^-$ decay: $\%\beta^-$=1.6 *2* (1952Sm41).
1952Sm41: measured β^+/β^- ratio, Eβ, $T_{1/2}$.
1981Ha09: measured $T_{1/2}$, K-capture/β^+ ratio.
$T_{1/2}$(^{130}Cs): 1981Ha09. Others: 1968Fe06, 1967Wa11, 1966Gf01, 1952Sm41, 1950Fi16, 1954Mi16.

^{130}Ba Levels

E(level)	J^π
0.0	0^+

β^- radiations

E(decay)	E(level)	$I\beta^{-\dagger}$	Log *ft*	Comments
(369 *11*)	0.0	1.6 *2*	5.36 *6*	av Eβ=131.6 *14* $I\beta^-$: from 1952Sm41. E(decay): 442 (1952Sm41).

† Absolute intensity per 100 decays.

^{130}Ba IT decay (9.4 ms) 1969WaZX,1966Br14,1999DeZZ

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

Parent: ^{130}Ba: E=2476.2 *7*; J$^{\pi}$=8^{-}; T$_{1/2}$=9.4 ms *4*; %IT decay=100.0

1969WaZX: ^{124}Sn(^{12}C,6n) E=90 MeV; ^{122}Sn(^{12}C,4n) E=62 MeV; measured isomer T$_{1/2}$ by pulsed beam and α(K)exp′s.

1966Br14, 1969Ro23: ^{122}Sn(^{12}C,4n) E=65 MeV. Measured T$_{1/2}$ of isomer.

And conversion electrons, pulsed beam.

1999DeZZ: ^{133}Cs(d,5n) E=45 MeV. Measured isomer T$_{1/2}$ from time decay of four main γ rays with a pulsed deuteron beam.

^{130}Ba Levels

E(level)	J$^{\pi}$†	T$_{1/2}$	Comments
0.0	0^{+}		
357.2 *3*	2^{+}		
901.8 *6*	4^{+}		
908.3 *9*	2^{+}		
1360.8 *7*	3$^{(+)}$		
1593.0 *7*	6^{+}		
2013.2 *7*	5^{+}		
2395.9 *7*	8^{+}		
2476.2 *7*	8^{-}	9.4 ms *4*	T$_{1/2}$: weighted average of 9.54 ms *14* (1999DeZZ), 13.5 ms *10* (1969WaZX) and 8.8 ms *2* (1966Br14). Additional information 1.

† From Adopted Levels.

γ(^{130}Ba)

Iγ normalization: Ti(357γ+908γ)=100.

E$_{\gamma}$†	I$_{\gamma}$†#	E$_{i}$(level)	J$^{\pi}_{i}$	E$_{f}$	J$^{\pi}_{f}$	Mult.‡	δ	α@	Comments
80.3 *2*	6.7 *7*	2476.2	8^{-}	2395.9	8^{+}	E1		0.419	α(K)= 0.357; α(L)= 0.0495; α(M)=0.01009; α(N+..)=0.00259 Mult.: from α(exp)=0.37 *8* (1969WaZX, from intensity balance at 2395.9 level).
357.2 *3*	100	357.2	2^{+}	0.0	0^{+}	E2		0.0263	α(K)=0.02167; α(L)=0.00365; α(M)=0.00076; α(N+..)=0.00020
420.3 *5*	3 *1*	2013.2	5^{+}	1593.0	6^{+}				
452.5 *5*	3 *1*	1360.8	3$^{(+)}$	908.3	2^{+}				
463.1 *4*	13 *2*	2476.2	8^{-}	2013.2	5^{+}	E3		0.0361	α(K)= 0.0281; α(L)=0.00626; α(M)=0.00134; α(N+..)=0.00036 Mult.: from α(K)exp=0.028 *3* (1969WaZX).
544.5 *5*	85 *10*	901.8	4^{+}	357.2	2^{+}	E2		0.00790	α(K)=0.00660; α(L)=0.00097 Mult.: from α(K)exp=0.0076 *10* (1969Ro23). Additional information 2.
551.1	≈2	908.3	2^{+}	357.2	2^{+}				
652.5 *5*	7 *1*	2013.2	5^{+}	1360.8	3$^{(+)}$				
691.1 *5*	76 *10*	1593.0	6^{+}	901.8	4^{+}	E2			Mult.: from α(K)exp=0.0043 *7* (1969Ro23). Additional information 3.
802.9 *5*	9 *1*	2395.9	8^{+}	1593.0	6^{+}				
883.0 *5*	66 *8*	2476.2	8^{-}	1593.0	6^{+}	M2+E3	1.1 *6*	0.0069 *8*	α(K)=0.0058 *7*; α(L)=0.00082 *7* Additional information 4.

Continued on next page (footnotes at end of table)

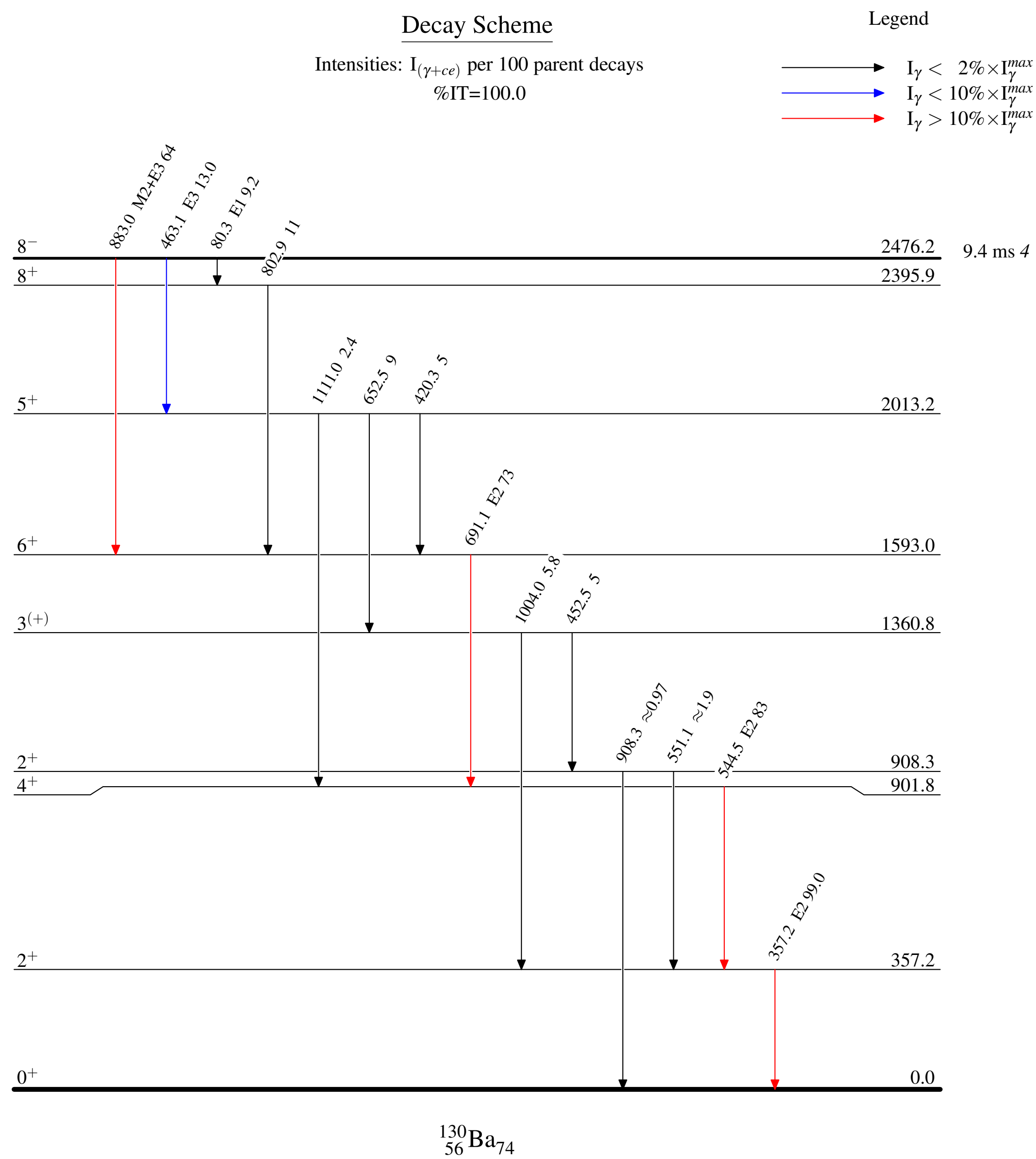
^{130}Ba IT decay (9.4 ms) 1969WaZX,1966Br14,1999DeZZ (continued)

$\gamma(^{130}Ba)$ (continued)

E_γ †	I_γ †#	E_i(level)	J_i^π	E_f	J_f^π	Comments
						δ: from α(K)exp=0.0058 *6* (weighted average of 0.0075 *8* (1969Ro23) and 0.0052 *5* (1969WaZX)).
908.3	≈1	908.3	2^+	0.0	0^+	
1004.0 *8*	5 *2*	1360.8	$3^{(+)}$	357.2	2^+	
1111.0 *10*	2.5 *10*	2013.2	5^+	901.8	4^+	

† From 1969WaZX.
‡ From α(K)exp′s of 1969WaZX and 1969Ro23 normalized to α(K)(357.2)=0.217 (E2 theory).
# For absolute intensity per 100 decays, multiply by 0.965.
@ 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.

^{130}Ba IT decay (9.4 ms) 1969WaZX,1966Br14,1999DeZZ



^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

Parent: ^{130}La: E=0.0; J$^{\pi}$=3$^{(+)}$; $T_{1/2}$=8.7 min *1*; Q(ε)=5666 *70*; %ε+%β^+ decay=100.0
^{130}La-Q(ε): Q(ε)=5666 *70* ($\beta\gamma$ coin,1998Ko66); 5698 *205* (syst,1995Au04).
^{130}La-$T_{1/2}$: $T_{1/2}$=8.7 min *1* (1963Ya05).
1982Ur01: measured Eγ, Iγ, $\gamma\gamma$.
1995Ki06, 1994Si02: measured Eγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ at 90° and 180°.
1973MeZZ (also 1971EaZU): measured Eγ, Iγ. (see 1978LeZA or 1974Hi08 for listing of Eγ and Iγ from 1973MeZZ).
Others:
1998Ko66: measured Q(ε) from $\beta\gamma$ coin.
1997As05: measured $\gamma\gamma(\theta)$ for 822-357 cascade.
1974Dr04: measured Eγ, Iγ.
1968Ab02: measured Eγ.
1965Ge03, 1963Ya05, 1961Sh17: measured γ, $T_{1/2}$(^{130}Ba).

^{130}Ba Levels

E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†
0.0	0$^+$	1844.57 *10*	4$^+$	2317.87 *15*	(3,4$^+$)	2891.2# *2*	
357.34 *7*	2$^+$	1882.90 *10*	2$^+$	2346.81 *10*	3$^{(+)}$	2935.4# *4*	
901.78 *10*	4$^+$	1918.6# *2*	3	2407.8# *4*		3265.2?‡ *2*	
907.98 *8*	2$^+$	2053.6 *2*	(3,4$^+$)	2433.8# *4*		3660.0 *2*	(2$^+$,3,4$^+$)
1179.5# *2*	0$^+$	2079.13 *9*	3$^{(+)}$	2557.1# *3*		3676.2# *4*	
1361.01 *9*	3$^{(+)}$	2168.4# *3*	5$^-$	2602.1# *3*		3704.7‡ *4*	(2$^+$,3,4$^+$)
1477.50 *10*	(4$^+$)	2248.09 *12*	(3,4$^+$)	2645.57 *12*	3$^{(+)}$	3711.9‡ *4*	
1557.47 *10*	2$^+$	2269.2# *2*		2733.7# *4*	(1,2$^+$)	3798.7# *3*	
1592.9 *3*	6$^+$	2279.5# *2*		2784.0# *2*	(3,4$^+$)	4006.8# *4*	

† From Adopted Levels.
‡ Level not given in 1995Ki06.
# From 1995Ki06 only.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(1.95×10^3 *7*)	3711.9	0.079	1.30	5.8	1.38	av Eβ=422 *31*; εK=0.802 *13*; εL=0.1104 *19*; εM+=0.0308 *6*
(1.96×10^3 *7*)	3704.7	0.090	1.45	5.8	1.54	av Eβ=426 *31*; εK=0.800 *13*; εL=0.1102 *19*; εM+=0.0307 *6*
(2.01×10^3 *7*)	3660.0	0.11	1.51	5.8	1.62	av Eβ=445 *31*; εK=0.792 *14*; εL=0.1090 *21*; εM+=0.0304 *6*
(2.40×10^3 *7*)	3265.2?	0.18	0.79	6.2	0.97	av Eβ=620 *32*; εK=0.693 *22*; εL=0.095 *3*; εM+=0.0264 *9*
(3.02×10^3 *7*)	2645.57	1.6	2.1	6.0	3.7	av Eβ=899 *32*; εK=0.488 *23*; εL=0.066 *4*; εM+=0.0185 *9*
(3.11×10^3 *7*)	2557.1	0.2	0.2	7.0	0.4	av Eβ=939 *32*; εK=0.459 *23*; εL=0.062 *3*; εM+=0.0174 *9*
(3.32×10^3 *7*)	2346.81	3.7	3.2	5.9	6.9	av Eβ=1035 *32*; εK=0.396 *21*; εL=0.054 *3*; εM+=0.0150 *8*
(3.35×10^3 *7*)	2317.87	0.31	0.26	7.0	0.57	av Eβ=1048 *32*; εK=0.388 *20*; εL=0.053 *3*; εM+=0.0147 *8*
(3.59×10^3 *7*)	2079.13	6.48	4.02	5.9	10.5	av Eβ=1158 *33*; εK=0.326 *18*; εL=0.0443 *24*; εM+=0.0123 *7*
(3.61×10^3 *7*)	2053.6	0.6	0.3	7.0	0.9	av Eβ=1170 *33*; εK=0.320 *17*; εL=0.0435 *23*; εM+=0.0121 *7*
(3.78×10^3 *7*)	1882.90	6.5	3.2	6.0	9.7	av Eβ=1248 *33*; εK=0.283 *15*; εL=0.0383 *21*; εM+=0.0107 *6*
(3.82×10^3 *7*)	1844.57	1.8	0.84	6.6	2.6	av Eβ=1266 *33*; εK=0.275 *15*; εL=0.0373 *20*; εM+=0.0104 *6*
(4.11×10^3 *7*)	1557.47	3.1	1.1	6.6	4.2	av Eβ=1399 *33*; εK=0.223 *12*; εL=0.0302 *16*; εM+=0.0084 *5*
(4.19×10^3 *7*)	1477.50	2.4	0.79	6.7	3.2	av Eβ=1437 *33*; εK=0.211 *11*; εL=0.0286 *15*; εM+=0.0079 *4*
(4.30×10^3 *7*)	1361.01	5.4	1.6	6.4	7.0	av Eβ=1491 *33*; εK=0.194 *10*; εL=0.0263 *14*; εM+=0.0073 *4*

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^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(4.49×10^3‡ *7*)	1179.5	0.3	0.08	7.8	0.4	av Eβ=1576 *33*; εK=0.171 *9*; εL=0.0232 *12*; εM+=0.0064 *4*
(4.76×10^3 *7*)	907.98	18 *2*	3.7 *4*	6.17 *6*	22 *2*	av Eβ=1703 *33*; εK=0.143 *7*; εL=0.0193 *10*; εM+=0.0054 *3* E(β^+)=3740 *90* in coin with 909γ (1998Ko66).
(4.76×10^3 *7*)	901.78	4.4	0.88	6.8	5.3	av Eβ=1706 *33*; εK=0.142 *7*; εL=0.0192 *10*; εM+=0.0053 *3*
(5.31×10^3 *7*)	357.34	16	2.1	6.5	18	av Eβ=1963 *34*; εK=0.101 *5*; εL=0.0136 *6*; εM+=0.00378 *17* E(β^+)=4260 *120* in coin with 357γ (1998Ko66).

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

γ(^{130}Ba)

Iγ normalization: from Σ (I(γ+ce) of γ's to g.s.)=100.
R=Iγ(90°)/Iγ(180°) (1995Ki06,1994Si02).

E$_\gamma$†	I$_\gamma$‡d	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.	αe	Comments
196.1@ *3*		2079.13	3$^{(+)}$	1882.90	2$^+$			
196.2#g	0.25c *4*	1557.47	2$^+$	1361.01	3$^{(+)}$			
234.5& *3*	0.14c *4*	2079.13	3$^{(+)}$	1844.57	4$^+$			
264.1@ *3*		2317.87	(3,4$^+$)	2053.6	(3,4$^+$)			
267.7 *1*	0.6 *2*	2346.81	3$^{(+)}$	2079.13	3$^{(+)}$			
271.4@ *3*		1179.5	0$^+$	907.98	2$^+$			(271γ)(908γ)(θ): R=0.54 *5*.
298.7@ *3*		2645.57	3$^{(+)}$	2346.81	3$^{(+)}$			
325.5@ *3*		1882.90	2$^+$	1557.47	2$^+$			
327.9 *3*	≈0.7b	2645.57	3$^{(+)}$	2317.87	(3,4$^+$)			I$_\gamma$: from 1982Ur01. Iγ=2.43 *16* (1973MeZZ).
357.4 *1*	100 *3*	357.34	2$^+$	0.0	0$^+$	E2	0.0262	α(K)=0.02163; α(L)=0.00365; α(M)=0.00076; α(N+..)=0.00020
360.8@ *3*		2279.5		1918.6	3			
367.1 *3*	0.5 *2*	1844.57	4$^+$	1477.50	(4$^+$)			(367γ)(1120γ)(θ): R=1.02 *10*. (367γ)(569γ)(θ): R=1.07 *7*. δ(Q/D)=−1.0 *8* or +213 *167* (1995Ki06).
376.2@ *3*		2645.57	3$^{(+)}$	2269.2				
377.7@ *3*		1557.47	2$^+$	1179.5	0$^+$			(378γ)(822γ)(θ): R=1.05 *4*. (378γ)(271γ)(θ): R=1.00 *8*.
397.6 *6*	0.6 *3*	2645.57	3$^{(+)}$	2248.09	(3,4$^+$)			
427.9@ *3*		2346.81	3$^{(+)}$	1918.6	3			
437.2@ *3*		2784.0	(3,4$^+$)	2346.81	3$^{(+)}$			
453.2 *1*	4.7 *2*	1361.01	3$^{(+)}$	907.98	2$^+$			(453γ)(908γ)(θ): R=1.68 *4*. δ(Q/D)=+0.31 *2* or +13 *3* (1995Ki06).
459.4 *4*	0.9 *2*	1361.01	3$^{(+)}$	901.78	4$^+$			(459γ)(544γ)(θ): R=1.19 *3*. δ(Q/D)=−0.20 *7* or −2.5 *5* (1995Ki06).
464.2 *2*	1.0 *3*	2346.81	3$^{(+)}$	1882.90	2$^+$			
x472.9a *2*	0.6 *4*							
473.4@ *3*		2317.87	(3,4$^+$)	1844.57	4$^+$			(473γ)(1487γ)(θ): R=0.85 *3*.
483.7 *3*	1.0 *2*	1844.57	4$^+$	1361.01	3$^{(+)}$			
496.3@ *3*		2053.6	(3,4$^+$)	1557.47	2$^+$			(496γ)(378γ)(θ): R=0.69 *14*.

Continued on next page (footnotes at end of table)

^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ (continued)

γ(^{130}Ba) (continued)

E_γ[†]	I_γ[‡d]	E_i(level)	J^π_i	E_f	J^π_f	Comments
502.2 *5*	0.25 *5*	2346.81	$3^{(+)}$	1844.57	4^+	
521.8[f] *5*	≈0.8[fb]	1882.90	2^+	1361.01	$3^{(+)}$	
521.8[f] *5*	≈0.5[fb]	2079.13	$3^{(+)}$	1557.47	2^+	(522γ)(378γ)(θ): R=0.63 *6*. δ(Q/D)=−0.8 *4* (1995Ki06).
544.5 *1*	20 *2*	901.78	4^+	357.34	2^+	(544γ)(357γ)(θ): R=0.876 *7*.
550.7 *1*	32 *2*	907.98	2^+	357.34	2^+	(551γ)(357γ)(θ): R=0.949 *7*. δ(Q/D)=−0.296 *7* or −40 *13* (1995Ki06).
566.4[&] *3*	0.43[c] *3*	2645.57	$3^{(+)}$	2079.13	$3^{(+)}$	
569.4 *1*	3.5 *4*	1477.50	(4^+)	907.98	2^+	(569γ)(908γ)(θ): R=0.905 *21*.
575.6[@] *3*		2168.4	5^-	1592.9	6^+	
575.7[f] *5*	2.5[fb] *3*	1477.50	(4^+)	901.78	4^+	(576γ)(544γ)(θ): R=0.977 *17*. δ(Q/D)=−0.43 *8* or +2.4 *5* (1995Ki06).
576.2[f] *5*	≈0.3[fb]	2053.6	$(3,4^+)$	1477.50	(4^+)	(576γ)(1120γ)(θ): R=0.83 *4*. (576γ)(569γ)(θ): R=0.86 *3*.
589.2[@] *3*		2433.8		1844.57	4^+	
592.1 *4*	0.5 *1*	2645.57	$3^{(+)}$	2053.6	$(3,4^+)$	
601.5 *4*	0.4 *2*	2079.13	$3^{(+)}$	1477.50	(4^+)	
649.6 *1*	1.9 *2*	1557.47	2^+	907.98	2^+	(650γ)(908γ)(θ): R=0.707 *23*. δ(Q/D)=−0.01 *3* or +3.2 *4* (1995Ki06).
655.6	0.26[c] *4*	1557.47	2^+	901.78	4^+	(656γ)(544γ)(θ): R=0.81 *5*.
691.1[@] *3*		1592.9	6^+	901.78	4^+	
692.8 *7*	0.39 *5*	2053.6	$(3,4^+)$	1361.01	$3^{(+)}$	
703.3[&] *3*	0.42[c] *6*	1882.90	2^+	1179.5	0^+	(703γ)(822γ)(θ): R=1.01 *7*. (703γ)(271γ)(θ): R=1.17 *20*.
718.2 *1*	3.4 *2*	2079.13	$3^{(+)}$	1361.01	$3^{(+)}$	
726.9[@] *3*		2645.57	$3^{(+)}$	1918.6	3	
789.2[&] *3*	0.43[c] *6*	2346.81	$3^{(+)}$	1557.47	2^+	
801.2 *2*	1.0 *3*	2645.57	$3^{(+)}$	1844.57	4^+	(801γ)(1486γ)(θ): R=1.1 *1*. (801γ)(936γ)(θ): R=1.2 *1*. δ(Q/D)=−0.2 *2* or −2.4 *13* (1995Ki06).
[x]818[#]	0.23[c] *4*					
822.0[&] *3*	0.96[c] *9*	1179.5	0^+	357.34	2^+	(822γ)(357γ)(θ): R=0.507 *10*. (822γ)(357γ)(θ): A_2=+0.32 *4*, A_4=+1.03 *8* (1997As05).
840.1 *3*	0.29 *5*	2317.87	$(3,4^+)$	1477.50	(4^+)	I_γ: from 1973MeZZ. Iγ≈1.3 (1982Ur01). (840γ)(559γ)(θ): R=1.08 *12*.
[x]866.5[a] *4*	0.5 *1*					
869.3 *1*	2.0 *1*	2346.81	$3^{(+)}$	1477.50	(4^+)	(869γ)(1120γ)(θ): R=0.89 *4*. (869γ)(569γ)(θ): R=0.89 *3*. δ(Q/D)=+0.47 *11* or +3.8 *14* (1995Ki06).
908.0 *1*	21 *2*	907.98	2^+	0.0	0^+	
930.3[@] *3*		2407.8		1477.50	(4^+)	
936.6 *2*	1.0 *2*	1844.57	4^+	907.98	2^+	(937γ)(908γ)(θ): R=0.87 *5*.
942.8 *1*	1.2 *1*	1844.57	4^+	901.78	4^+	(943γ)(544γ)(θ): R=0.711 *18*. δ(Q/D)=+0.16 *13* or +0.8 *2* (1995Ki06).
957.0 *3*	0.5 *1*	2317.87	$(3,4^+)$	1361.01	$3^{(+)}$	
974.9 *1*	3.8 *2*	1882.90	2^+	907.98	2^+	(975γ)(908γ)(θ): R=0.91 *3*. δ(Q/D)=−0.25 *3* or +45 *6* (1995Ki06).
981.0[@] *3*		1882.90	2^+	901.78	4^+	(981γ)(544γ)(θ): R=0.86 *20*.
986.4 *10*	0.3 *1*	2346.81	$3^{(+)}$	1361.01	$3^{(+)}$	
1003.6 *1*	9.7 *3*	1361.01	$3^{(+)}$	357.34	2^+	(1004γ)(357γ)(θ): R=1.114 *12*. δ(Q/D)=−0.0009 *86* or −4.6 *2* (1995Ki06).

Continued on next page (footnotes at end of table)

^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ (continued)

γ(^{130}Ba) (continued)

E_γ[†]	I_γ[‡d]	E_i(level)	J^π_i	E_f	J^π_f	Comments
1010.5[@] 3		1918.6	3	907.98	2^+	
1016.7[@] 3		1918.6	3	901.78	4^+	(1017γ)(544γ)(θ): R=1.28 8. δ(Q/D)=−0.4 2 or −1.6 7 (1995Ki06).
1017.0[a] 3	0.7 2	3265.2?		2248.09	$(3,4^+)$	
1088.0[@] 3		2645.57	$3^{(+)}$	1557.47	2^+	
1090.8[@] 3		2935.4		1844.57	4^+	
1120.2 1	2.3 2	1477.50	(4^+)	357.34	2^+	(1120γ)(357γ)(θ): R=0.923 18.
1151.8[&] 3	0.43[c] 5	2053.6	$(3,4^+)$	901.78	4^+	(1152γ)(544γ)(θ): R=1.07 6.
1167.8[@] 3		2645.57	$3^{(+)}$	1477.50	(4^+)	
1171.1 1	4.6 2	2079.13	$3^{(+)}$	907.98	2^+	(1171γ)(908γ)(θ): R=1.13 4. δ(Q/D)=+0.008 25 or −4.8 6 (1995Ki06).
1177.4 1	2.7 1	2079.13	$3^{(+)}$	901.78	4^+	(1177γ)(544γ)(θ): R=1.25 3. δ(Q/D)=−0.34 7 or −1.8 3 (1995Ki06).
1200.1 1	3.6 3	1557.47	2^+	357.34	2^+	(1200γ)(357γ)(θ): R=0.965 15. δ(Q/D)=−0.31 2 or −23 9 (1995Ki06).
1222.8[@] 3		4006.8		2784.0	$(3,4^+)$	
1266.6[@] 3		2168.4	5^-	901.78	4^+	
1306.3[@] 3		2784.0	$(3,4^+)$	1477.50	(4^+)	
1333.7[@] 3		2891.2		1557.47	2^+	
1340.2[@] 3		2248.09	$(3,4^+)$	907.98	2^+	
1346.3 1	1.1 1	2248.09	$(3,4^+)$	901.78	4^+	(1346γ)(544γ)(θ): R=0.85 3.
1361.1[@] 3		2269.2		907.98	2^+	
1377.7[@] 3		2279.5		901.78	4^+	(1378γ)(544γ)(θ): R=0.84 5.
1410.7 4	0.5 1	2317.87	$(3,4^+)$	907.98	2^+	(1411γ)(908γ)(θ): R=0.71 9.
1415.9[#g]	0.11[c] 5	2317.87	$(3,4^+)$	901.78	4^+	
1438.8 1	2.8 2	2346.81	$3^{(+)}$	907.98	2^+	(1438γ)(908γ)(θ): R=2.37 13. δ(Q/D)=+0.63 7 or +3.0 5 (1995Ki06).
1445.0 2	1.1 1	2346.81	$3^{(+)}$	901.78	4^+	(1445γ)(544γ)(θ): R=0.60 11. δ(Q/D)=+1.1 17 (1995Ki06).
1487.3 2	0.93 5	1844.57	4^+	357.34	2^+	(1487γ)(357γ)(θ): R=0.85 3.
1525.7 1	8.0 6	1882.90	2^+	357.34	2^+	(1526γ)(357γ)(θ): R=0.680 8. δ(Q/D)=+0.029 12 or +2.8 2 (1995Ki06).
1529.5[@] 3		3798.7		2269.2		
1530.2[@] 3		2891.2		1361.01	$3^{(+)}$	
1554.2[@] 3		2733.7	$(1,2^+)$	1179.5	0^+	
1557.1[@] 3	<0.3	1557.47	2^+	0.0	0^+	I_γ: estimated by 1982Ur01.
1561.2[@] 3		1918.6	3	357.34	2^+	(1561γ)(357γ)(θ): R=1.18 12. δ(Q/D)=+0.04 8 or −6 3 (1995Ki06).
1622.6[@] 3		3676.2		2053.6	$(3,4^+)$	
1649.1[&] 3	0.53[c] 12	2557.1		907.98	2^+	
[x]1654[#]	0.37[c] 9					
1694.1[@] 3		2602.1		907.98	2^+	
1695.8 3	0.52 8	2053.6	$(3,4^+)$	357.34	2^+	Placement from 1995Ki06.
1721.7 1	2.3 2	2079.13	$3^{(+)}$	357.34	2^+	(1722γ)(357γ)(θ): R=1.27 3. δ(Q/D)=+0.10 2 or −8.4 14 (1995Ki06).
[x]1736.0[a] 4	0.4 1					
1744.0 3	0.6 1	2645.57	$3^{(+)}$	901.78	4^+	(1744γ)(544γ)(θ): R=0.82 4. δ(Q/D)=+0.37 7 or +4.2 11 (1995Ki06).
1787.8[a] 3	0.5 1	3265.2?		1477.50	(4^+)	

Continued on next page (footnotes at end of table)

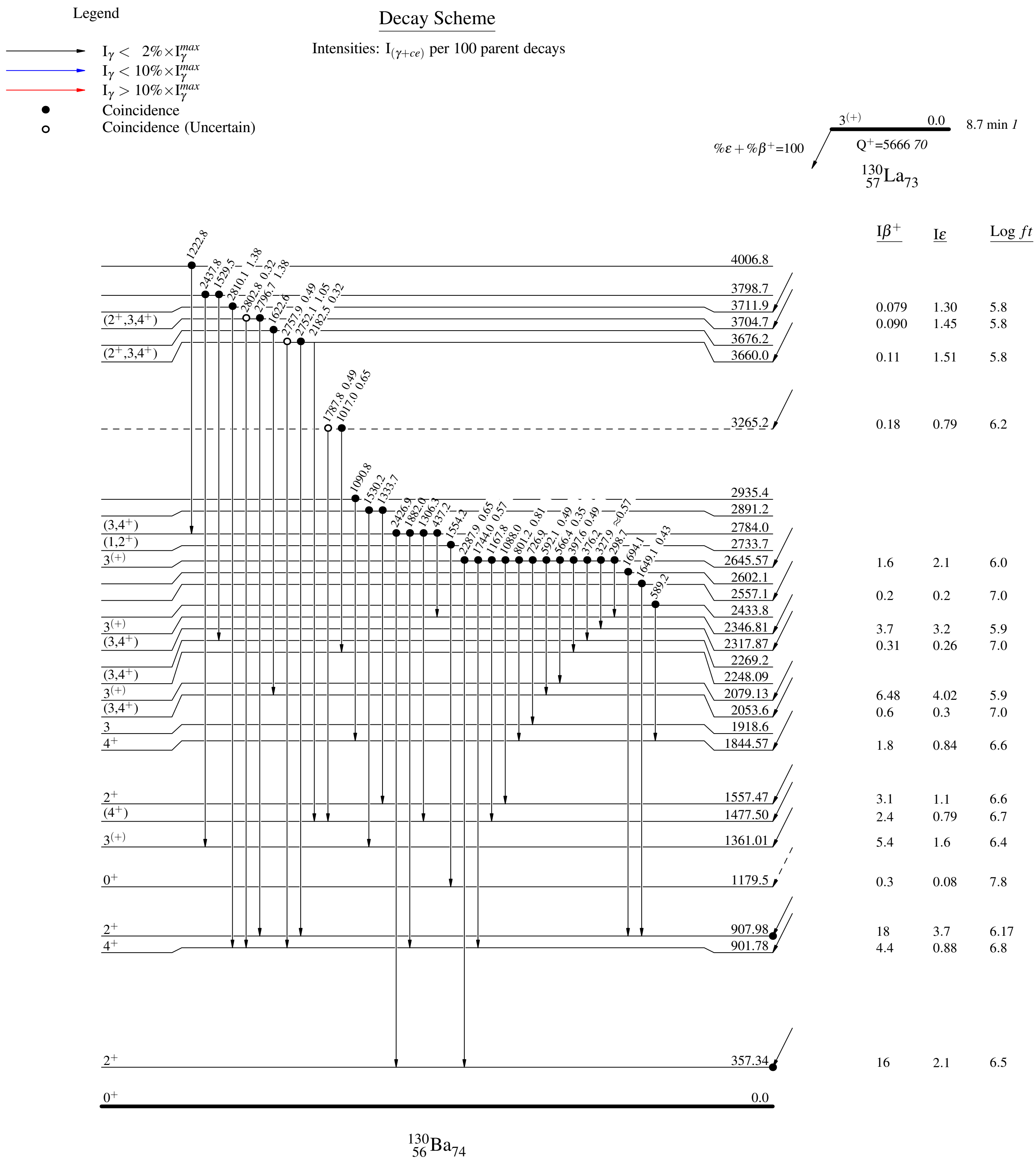
^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ (continued)

$\gamma(^{130}Ba)$ (continued)

E_γ [†]	I_γ [‡d]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1882.0[@] *3*		2784.0	(3,4$^+$)	901.78	4$^+$	(1882γ)(544γ)(θ): R=1.0 *1*.
1882.5[@] *3*		1882.90	2$^+$	0.0	0$^+$	
1890.5[@] *3*		2248.09	(3,4$^+$)	357.34	2$^+$	(1890γ)(357γ)(θ): R=1.1 *4*.
1911.6[@] *3*		2269.2		357.34	2$^+$	(1912γ)(357γ)(θ): R=1.02 *14*.
[x]1953.9[a] *3*	0.6 *1*					
[x]2035.7[a] *3*	0.5 *1*					
2182.5 *5*	0.3 *1*	3660.0	(2$^+$,3,4$^+$)	1477.50	(4$^+$)	
2287.9 *3*	0.7 *1*	2645.57	3$^{(+)}$	357.34	2$^+$	(2288γ)(357γ)(θ): R=1.22 *8*. δ(Q/D)=+0.07 *5* or −6.9 *23* (1995Ki06).
2426.9[@] *3*		2784.0	(3,4$^+$)	357.34	2$^+$	
2437.8[@] *3*		3798.7		1361.01	3$^{(+)}$	
2752.1[a] *3*	1.2 *1*	3660.0	(2$^+$,3,4$^+$)	907.98	2$^+$	
2757.9[a] *4*	0.5 *1*	3660.0	(2$^+$,3,4$^+$)	901.78	4$^+$	
2796.7[a] *4*	1.6 *2*	3704.7	(2$^+$,3,4$^+$)	907.98	2$^+$	
2802.8[a] *12*	0.3 *1*	3704.7	(2$^+$,3,4$^+$)	901.78	4$^+$	
2810.1[a] *3*	1.7 *3*	3711.9		901.78	4$^+$	

[†] From 1982Ur01, unless otherwise stated.
[‡] Average of 1982Ur01 and 1973MeZZ, except as noted.
[#] From 1973MeZZ only.
[@] From 1995Ki06 only. Intensity is not given. Uncertainty of 0.3 keV assigned by the evaluator, based on comparison of other Eγ's with those from 1982Ur01.
[&] From 1995Ki06. A similar Eγ is reported by 1973MeZZ, but not by 1982Ur01.
[a] From 1982Ur01, γ not reported by 1995Ki06.
[b] From $\gamma\gamma$ coin (1982Ur01).
[c] From 1973MeZZ.
[d] For absolute intensity per 100 decays, multiply by 0.81 *3*.
[e] 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.
[f] Multiply placed with intensity suitably divided.
[g] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ



^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ

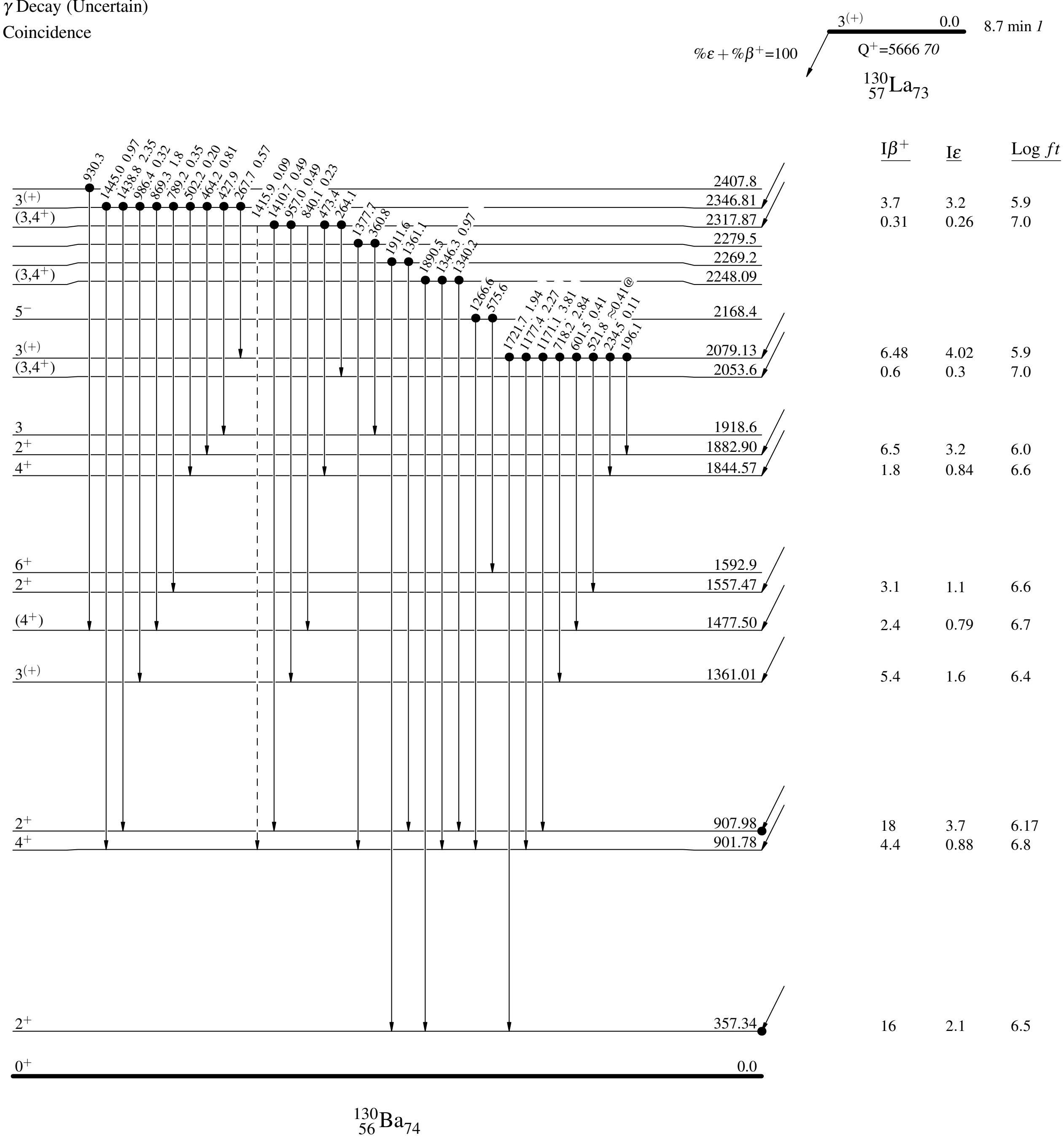
Decay Scheme (continued)

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

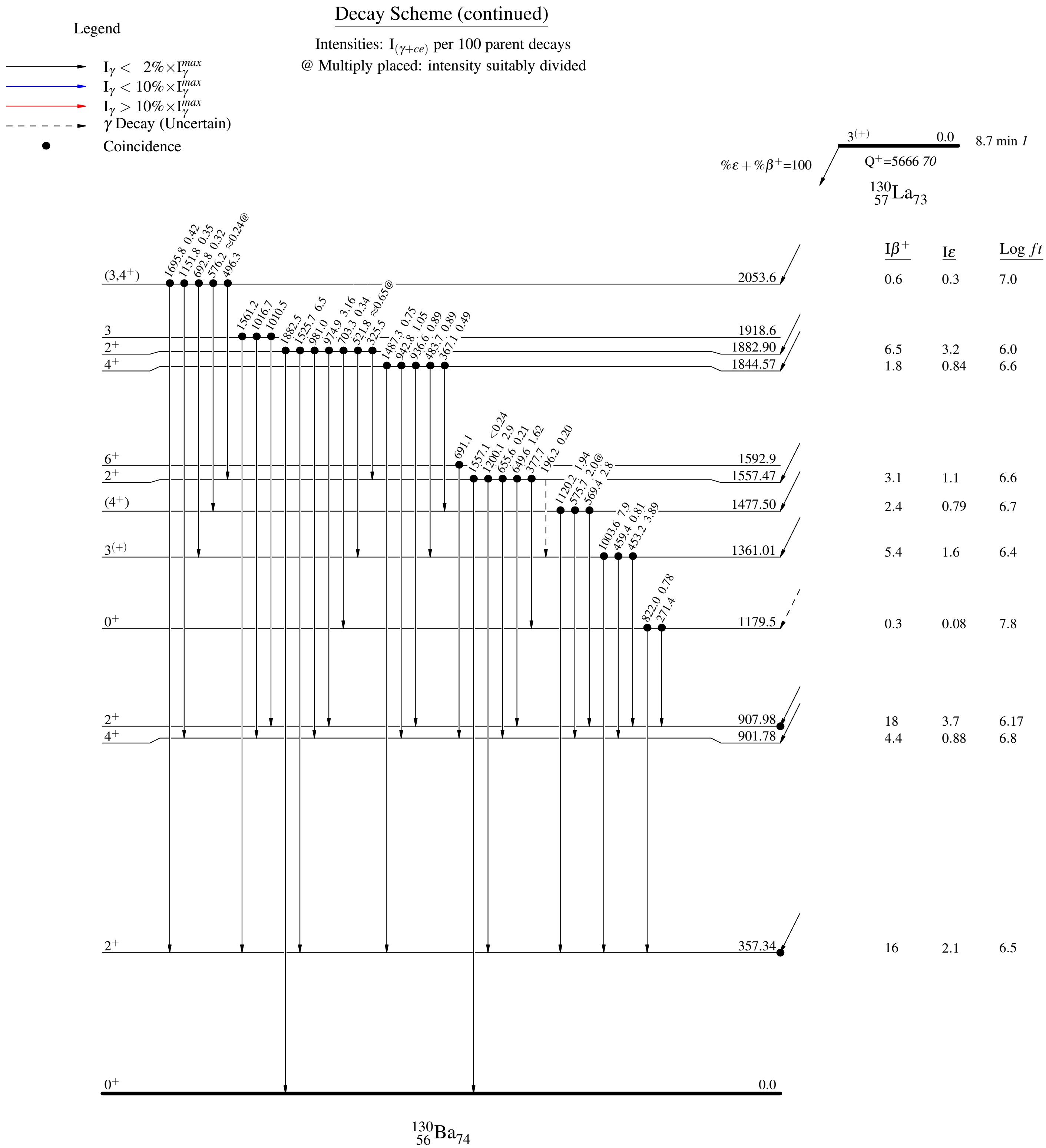
@ Multiply placed: intensity suitably divided

Legend

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



^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ

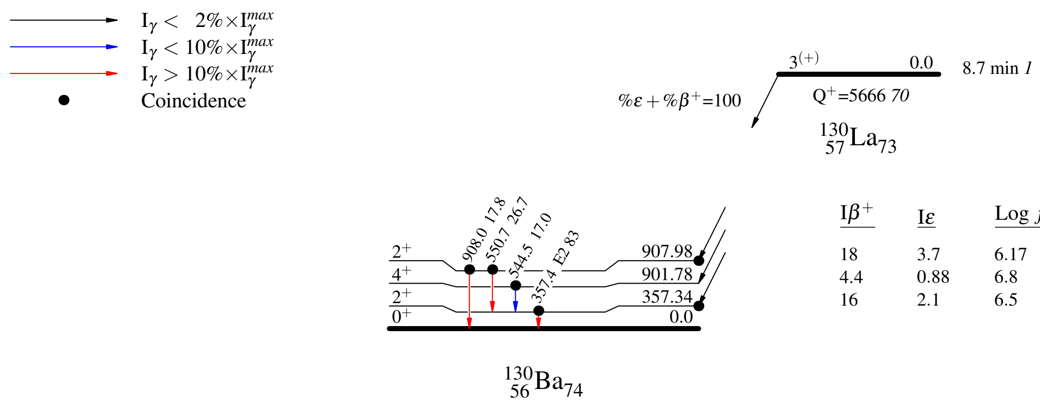


^{130}La ε decay (8.7 min) 1982Ur01,1995Ki06,1973MeZZ

Decay Scheme (continued)

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

@ Multiply placed: intensity suitably divided



$I\beta^+$	$I\varepsilon$	Log *ft*
18	3.7	6.17
4.4	0.88	6.8
16	2.1	6.5

^{120}Sn(^{13}C,3nγ),^{116}Cd(^{18}O,4nγ) 1985Su03,2000St07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

1985Su03 (also 1983Su09): ^{120}Sn(^{13}C,3nγ) E=45-58 MeV. Measured Eγ, Iγ, $\gamma\gamma$, excitation functions, $\gamma(\theta)$, ce.
2000St07: ^{116}Cd(^{18}O,4nγ) E=76 MeV. Measured lifetimes by recoil-distance Doppler shift method.
Others:
1985El08, 1984El08: ^{122}Sn(^{12}C,4nγ) E=80 MeV. Measured γ multiplicity, $\gamma\gamma$ energy correlation matrices.
Additional information 1.
1969Ro23, 1966Br14: ^{122}Sn(^{12}C,4nγ) E=65 MeV. Measured Eγ, Iγ, ce.
1965Mi02: ^{133}Cs(p,4nγ) E=27-55 MeV. Measured Eγ, Iγ.

^{130}Ba Levels

E(level)	J^{π}[†]	$T_{1/2}$[‡]
0.0[&]	0^+	
357.1[&] *2*	2^+	43.2 ps *5*
888.6 *3*		
901.4[&] *2*	4^+	3.83 ps *6*
907.4[e] *2*	$2^{(+)}$	
1360.4[e] *2*	$3^{(+)}$	
1476.9[e] *2*	(4^+)	
1544.1 *4*		
1592.4[&] *3*	6^+	0.98 ps *6*
2011.9[e] *3*	5^+	
2100.7[e] *2*	(6^+)	
2167.9[c] *3*	5^-	
2182.5 *3*		
2229.6 *4*		
2394.7[&] *3*	8^+	0.49 ps *14*
2474.5 *3*	8^-	9.4[#] ms *4*
2567.7[c] *3*	7^-	4.16 ps *14*
2799.3[e] *3*	(8^+)	
2927.7 *4*		
2928.4[d] *3*	(8^-)	
3066.5[c] *3*	9^-	5.27 ps *14*
3259.5[&] *3*	10^+	0.55 ps *7*
3289.5 *4*		
3422.5 *3*	10^+	
3434.5[d] *3*	(10^-)	
3602.1[e] *3*	(10^+)	
3658.5[c] *4*	11^-	2.10 ps *9*
3789.3 *4*	(10^+)	
3962.2 *4*		
3989.2[a] *4*	12^+	2.15 ps *21*
4077.5[d] *4*	(12^-)	
4221.9[&] *4*	(12^+)	
4255.7[b] *4*	(12^+)	1.52 ps *14*
4353.6[c] *4*	(13^-)	
4403.7 *4*		
4782.9[a] *4*	(14^+)	0.41[@] ps *4*
4878.9[d] *4*	(14^-)	
4884.9[b] *4*	(14^+)	3.4[@] ps *6*
5155.0[c] *5*	(15^-)	
5679.1[b] *5*	(16^+)	
5729.7[a] *5*	(16^+)	
5766.2[d] *5*	(16^-)	
6036.8[c] *5*	(17^-)	
6757.0[a] *5*	(18^+)	
6972.8[c] *6*		
8022.8[c] *6*		

† From 1985Su03, based on the $\gamma(\theta)$, excitation functions, and α(K)exp from ce data.
‡ From RDDS (2000St07).
# From Adopted Levels.
@ Effective half-life.
& Band(A): Ground-state band.
a Band(B): First S (super) band.
b Band(C): Second (S) band.
c Band(D): 5^- band; $\pi=-$, $\alpha=1$.
d Band(E): 5^- band; $\pi=-$,$\alpha=0$.
e Band(F): Quasi-γ band.

γ(^{130}Ba)

A_2, A_4 and α(K)exp′s are from 1985Su03.

Continued on next page (footnotes at end of table)

^{120}Sn(^{13}C,3nγ),^{116}Cd(^{18}O,4nγ) 1985Su03,2000St07 (continued)

γ(^{130}Ba) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[a]	Comments
163.0 2	<0.2	3422.5	10^+	3259.5	10^+			
357.1 2	100	357.1	2^+	0.0	0^+	E2	0.0263	α(K)=0.02169; α(L)=0.00366; α(M)=0.00076; α(N+..)=0.00020 A_2=+0.265 6, A_4=−0.052 9.
360.7 2	5.3 3	2928.4	(8^-)	2567.7	7^-	D+Q		A_2=−0.22 2, A_4=+0.04 3.
368.0 2	2.4 3	3434.5	(10^-)	3066.5	9^-			A_2=−0.40 5, A_4=+0.03 1.
399.8 2	8.2 3	2567.7	7^-	2167.9	5^-			A_2=+0.28 2, A_4=−0.12 4.
419.0 2	1.4[@] 5	4077.5	(12^-)	3658.5	11^-			
452.9 2	1.7 2	1360.4	$3^{(+)}$	907.4	$2^{(+)}$	D+Q		A_2=0.00 6, A_4=+0.20 10.
462.3 2	2.1 2	2474.5	8^-	2011.9	5^+			
466.4 2	0.9[@] 4	4255.7	(12^+)	3789.3	(10^+)			
467.1 2	0.8[@] 4	2567.7	7^-	2100.7	(6^+)			
498.8 2	18.7 2	3066.5	9^-	2567.7	7^-	E2		α(K)exp=0.0073 9 A_2=+0.34 1, A_4=−0.08 2.
506.1 2	4.5 2	3434.5	(10^-)	2928.4	(8^-)			A_2=+0.32 4, A_4=−0.09 7.
529.8 2	1.2 2	3789.3	(10^+)	3259.5	10^+			A_2=+0.36 8, A_4=+0.11 12.
531.5 2	2.6 2	888.6		357.1	2^+			
539.7 2	1.0 2	3962.2		3422.5	10^+			
544.3 2	77.8 4	901.4	4^+	357.1	2^+	E2		A_2=+0.259 6, A_4=−0.053 9.
550.3 2	3.0 2	907.4	$2^{(+)}$	357.1	2^+			A_2=+0.13 2, A_4=−0.08 4.
566.7 2	1.7[@] 5	3989.2	12^+	3422.5	10^+			
569.5 2	3.4 2	1476.9	(4^+)	907.4	$2^{(+)}$			A_2=+0.24 3, A_4=−0.02 5.
575.5 2	3.2[@] 5	1476.9	(4^+)	901.4	4^+			
575.5 2	1.2[@] 4	2167.9	5^-	1592.4	6^+			
590.1 2	2.7 2	2182.5		1592.4	6^+			
592.0 2	14.3 3	3658.5	11^-	3066.5	9^-	E2		α(K)exp=0.0054 7 A_2=+0.35 2, A_4=−0.08 3.
623.8 2	4.0 2	2100.7	(6^+)	1476.9	(4^+)			A_2=+0.21 3, A_4=−0.07 5.
629.2 2	4.3 2	4884.9	(14^+)	4255.7	(12^+)			A_2=+0.30 4, A_4=−0.10 7.
643.0 2	5.5 2	4077.5	(12^-)	3434.5	(10^-)			A_2=+0.32 5, A_4=−0.05 7.
651.5 2	1.9 2	2011.9	5^+	1360.4	$3^{(+)}$			A_2=+0.10 4, A_4=−0.02 7.
655.5 2	2.7[@] 4	1544.1		888.6				
671.8 2	1.7 2	3066.5	9^-	2394.7	8^+			A_2=−0.27 5, A_4=−0.08 9.
685.5 2	1.7 2	2229.6		1544.1				
691.1 2	61.1 4	1592.4	6^+	901.4	4^+	E2		α(K)exp=0.0029 5 A_2=+0.265 7, A_4=−0.06 1.
695.1 2	12.4 2	4353.6	(13^-)	3658.5	11^-	(E2)		A_2=+0.27 1, A_4=−0.02 2.
698.7 2	5.0 3	2799.3	(8^+)	2100.7	(6^+)			A_2=+0.25 2, A_4=+0.01 3.
729.7 2	6.6 3	3989.2	12^+	3259.5	10^+	E2		α(K)exp=0.0038 6 A_2=+0.23 2, A_4=−0.03 3.
745.2 2	1.4 2	2927.7		2182.5				
793.7 2	4.2[@] 5	4782.9	(14^+)	3989.2	12^+			A_2=+0.25 4, A_4=−0.03 7.
794.2 2	2.3[@] 5	5679.1	(16^+)	4884.9	(14^+)			
801.4 2	3.5[@] 8	4878.9	(14^-)	4077.5	(12^-)			A_2=+0.36 2, A_4=−0.03 3.
801.4 2	5.4[@] 8	5155.0	(15^-)	4353.6	(13^-)	(E2)		A_2=+0.36 2, A_4=−0.03 3.
802.3 2	28.9[@] 5	2394.7	8^+	1592.4	6^+	E2		α(K)exp=0.0021 4 A_2=+0.292 8, A_4=−0.06 1.
802.8 2	3.0[@] 9	3602.1	(10^+)	2799.3	(8^+)			
864.8 2	19.6 3	3259.5	10^+	2394.7	8^+	E2		α(K)exp=0.0021 4 A_2=+0.33 1, A_4=−0.08 2.
881.8 2	1.0[@] 3	6036.8	(17^-)	5155.0	(15^-)			
882.3 2	10.5[@] 7	2474.5	8^-	1592.4	6^+			

Continued on next page (footnotes at end of table)

^{120}Sn(^{13}C,3nγ),^{116}Cd(^{18}O,4nγ) 1985Su03,2000St07 (continued)

γ(^{130}Ba) (continued)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[#]	Comments
887.3 *2*	1.2 *2*	5766.2	(16$^-$)	4878.9	(14$^-$)		
907.4 *2*	2.1 *2*	907.4	2$^{(+)}$	0.0	0$^+$		A$_2$=+0.25 *9*, A$_4$=+0.02 *4*.
936.0[&] *2*		6972.8		6036.8	(17$^-$)		
946.8 *2*	1.6 *2*	5729.7	(16$^+$)	4782.9	(14$^+$)		A$_2$=+0.24 *8*, A$_4$=−0.02 *14*.
962.4 *2*	5.2 *2*	4221.9	(12$^+$)	3259.5	10$^+$	(E2)	A$_2$=+0.22 *5*, A$_4$=−0.11 *9*.
975.3 *2*	16.5 *3*	2567.7	7$^-$	1592.4	6$^+$	E1	α(K)exp=0.0007 *1* A$_2$=−0.24 *1*, A$_4$=−0.01 *2*.
981.2 *2*	1.4 *2*	4403.7		3422.5	10$^+$		
996.2 *2*	4.0 *2*	4255.7	(12$^+$)	3259.5	10$^+$		A$_2$=+0.31 *10*, A$_4$=−0.06 *16*.
1003.2 *2*	1.4 *2*	1360.4	3$^{(+)}$	357.1	2$^+$	D+Q	A$_2$=+0.08 *6*, A$_4$=+0.09 *9*.
1027.3 *2*	0.7[@] *3*	6757.0	(18$^+$)	5729.7	(16$^+$)		
1027.8 *2*	4.3[@] *5*	3422.5	10$^+$	2394.7	8$^+$		A$_2$=+0.36 *3*, A$_4$=−0.04 *5*.
1050.0[&] *2*		8022.8		6972.8			
1107.0 *2*	1.0 *2*	3289.5		2182.5			
1110.4 *2*	1.8 *2*	2011.9	5$^+$	901.4	4$^+$		A$_2$=+0.16 *12*, A$_4$=0.15 *19*.
1119.8 *2*	3.9 *3*	1476.9	(4$^+$)	357.1	2$^+$		A$_2$=+0.24 *4*, A$_4$=−0.07 *9*.
1199.3 *2*	1.7 *2*	2100.7	(6$^+$)	901.4	4$^+$		A$_2$=+0.33 *5*, A$_4$=−0.07 *9*.
1207.4 *2*	2.2 *2*	3602.1	(10$^+$)	2394.7	8$^+$		A$_2$=+0.33 *6*, A$_4$=−0.006 *9*.
1266.6 *2*	3.7 *2*	2167.9	5$^-$	901.4	4$^+$	D(+Q)	A$_2$=−0.21 *4*, A$_4$=−0.05 *6*.

[†] From (^{13}C,3nγ) (1985Su03); Δ(Eγ)=0.2 keV assigned (evaluator).
[‡] From (^{13}C,3nγ) (1985Su03) at 52 MeV.
[#] From $\gamma(\theta)$ and α(K)exp.
[@] From $\gamma\gamma$ coin; component of a doublet.
[&] From 2000St07.
[a] 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.

$^{120}Sn(^{13}C,3n\gamma),^{116}Cd(^{18}O,4n\gamma)$ 1985Su03,2000St07

Level Scheme

Intensities: Relative I_γ

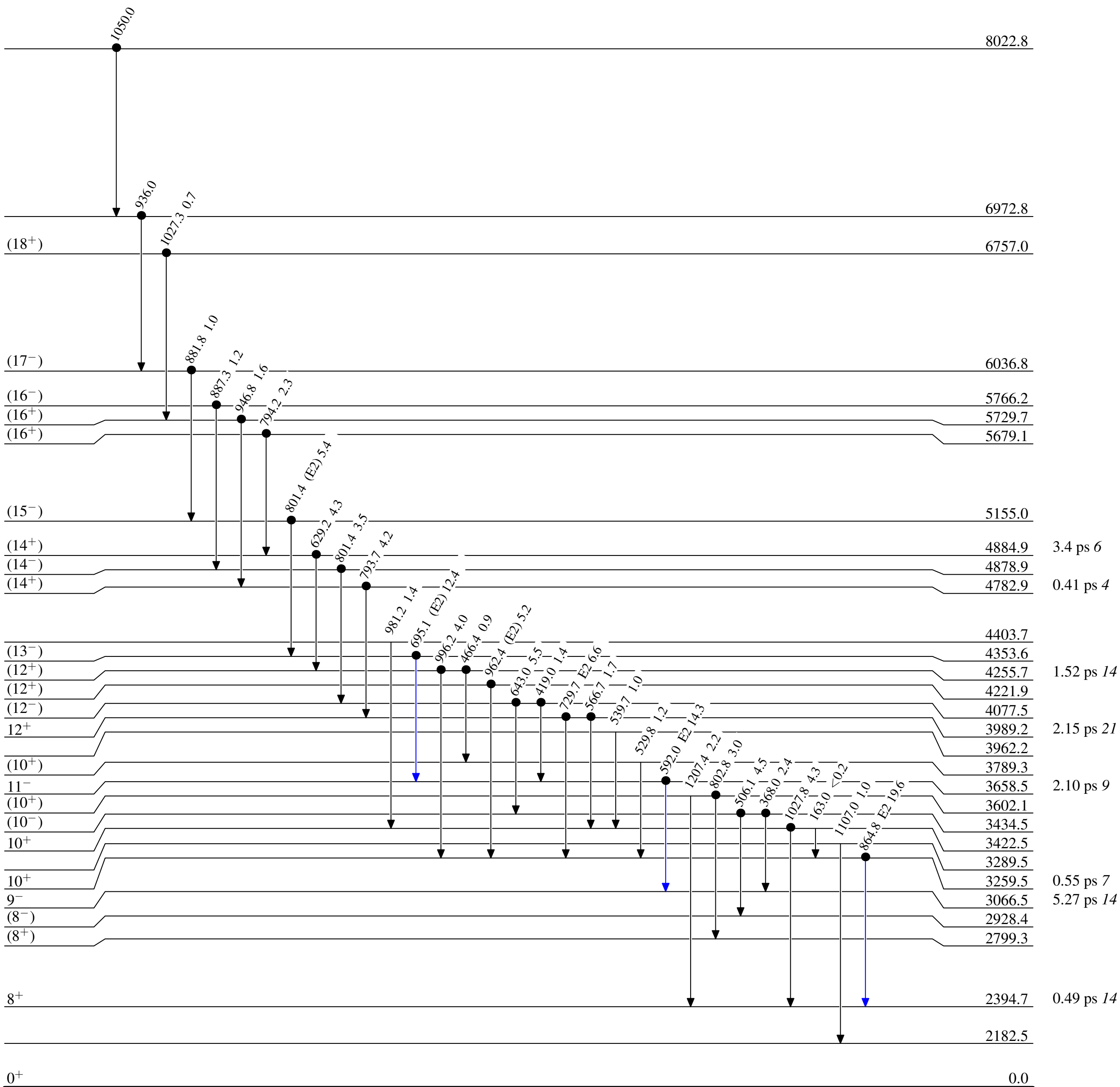
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

Coincidence



$^{130}_{56}Ba_{74}$

$^{120}Sn(^{13}C,3n\gamma),^{116}Cd(^{18}O,4n\gamma)$ 1985Su03,2000St07

Level Scheme (continued)

Intensities: Relative I_γ

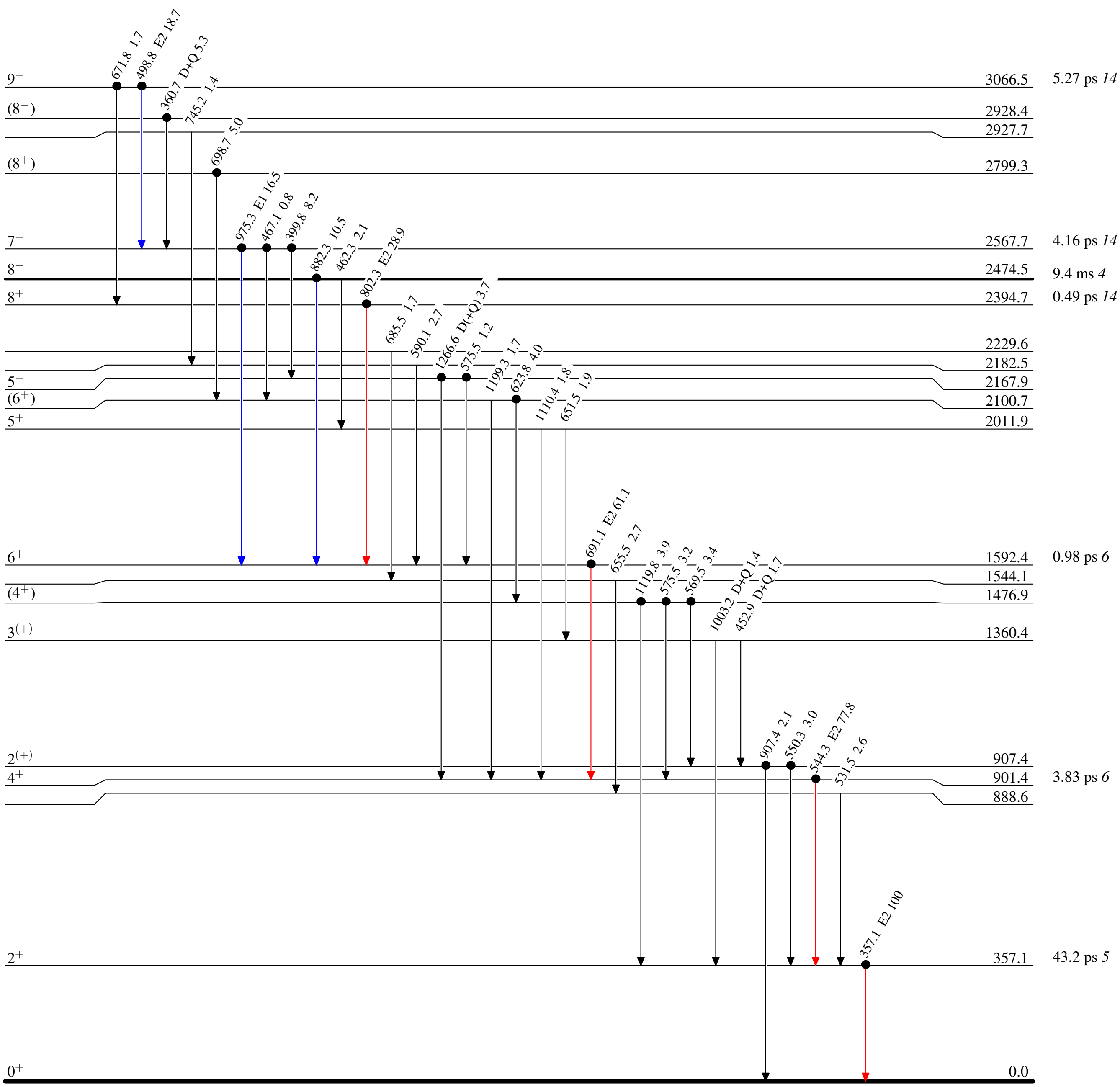
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

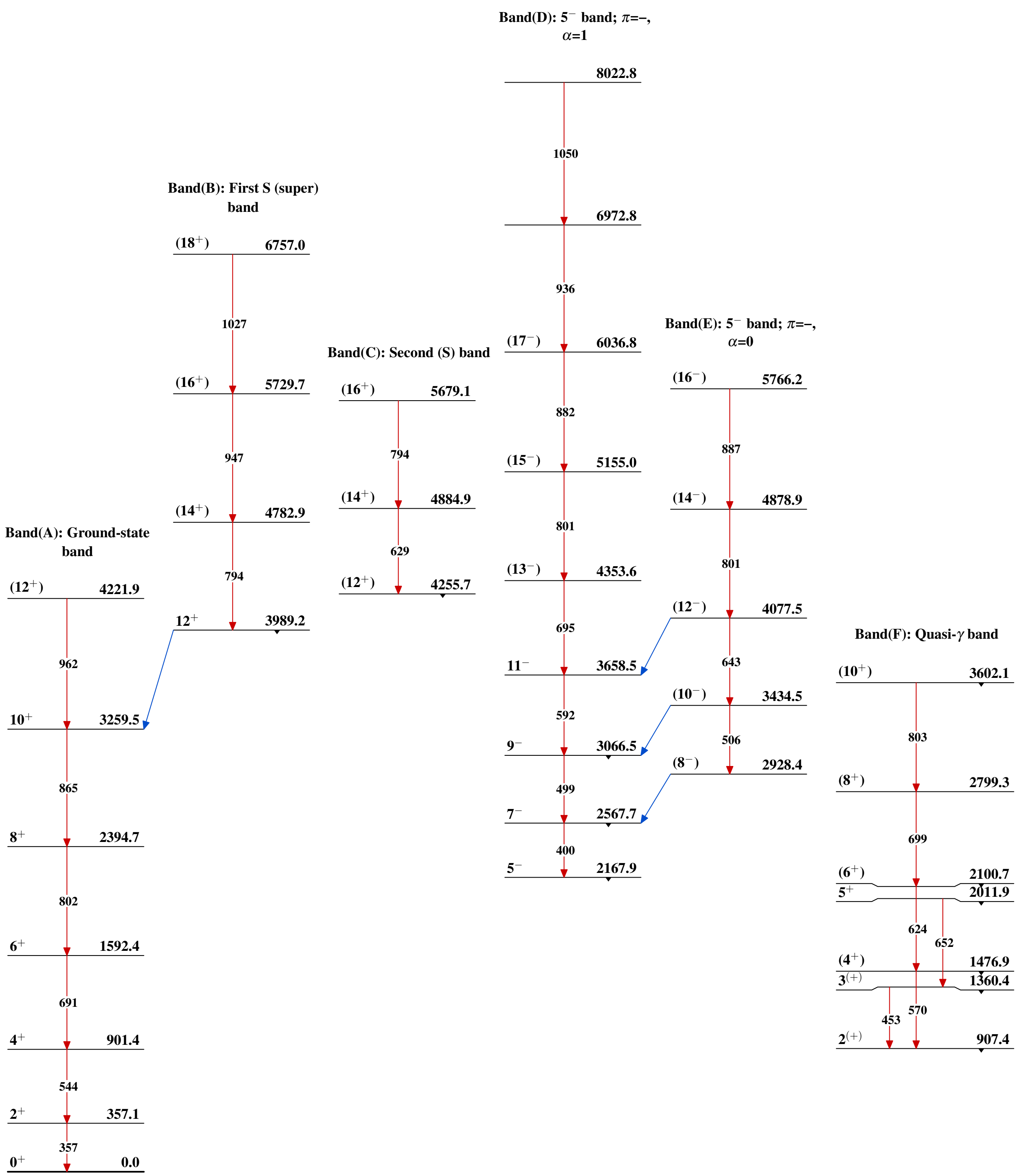
$I_\gamma > 10\% \times I_\gamma^{max}$

Coincidence



$^{130}_{56}Ba_{74}$

$^{120}Sn(^{13}C,3n\gamma),^{116}Cd(^{18}O,4n\gamma)$ 1985Su03,2000St07



$^{130}_{56}Ba_{74}$

^{130}Ba(α,α') **1985Bu13**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

1985Bu13: E=20 MeV.

^{130}Ba Levels

E(level)	J$^{\pi}$	Comments
0.0	0^{+}	
355 *5*		
903 *5*		
1948 *5*	(3^{-})	J$^{\pi}$: from trend of 3^{-} states observed in ^{132}Ba (at 2070), ^{134}Ba(at 2251), ^{136}Ba (at 2529) and ^{138}Ba (at 2879) (1985Bu13).

Coulomb excitation

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

1989Bu07: (α,α') E=10.8-11.8 MeV; (^{12}C,^{12}C$'$) E=32-38 MeV; (^{16}O,^{16}O$'$) E=43-49 MeV. Measured B(E2) and Q for first 2^+ state.
1980Br01: (^{32}S,^{32}S$'\gamma$) E=72-80 MeV. Measured μ by $\gamma(\theta$,H).
1974Ne15: (^{16}O,^{16}Oγ) E=40-60 MeV. Measured $\gamma(\theta)$. (d,d$'$) E=12 MeV. Measured cross section. Deduced Q.
1973ToXW: (^{32}S,^{32}S$'\gamma$) E=70 MeV; (^{40}Ca,^{40}Ca$'$) E=85 MeV. Measured γ, deduced Q.
1970Ku19: (^{16}O,^{16}Oγ). Measured $\gamma(\theta$,H,t). Deduced hyperfine fields.
1967Si03: (^{16}O,^{16}Oγ) E=20.7, 25.1 MeV; (^{32}S,^{32}S$'$) E=41.7, 49.4 MeV. Measured Q.
1958Fa01: (α,α') E$\leq$5.6 MeV.

^{130}Ba Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	0^+		
357.3	2^+	40.7 ps *4*	B(E2)$\uparrow$=1.163 *11* g=0.35 *3* (1980Br01) B(E2)$\uparrow$: average of 1.167 *11* (constructive) and 1.159 *12* (destructive) (1989Bu07). Others: 1.21 *38* (destructive) (1973ToXW); 1.36 *14* (1967Si03); 0.75 *18* (1958Fa01). Q: reorientation method. −1.02 *16* (constructive), −0.09 *16* (destructive) (1989Bu07) assuming that γ from second 2^+ to first 2^+ is predominantly E2. Others: −0.33 *24* (1974Ne15), +0.37 *18* (destructive) (1973ToXW), −1.10 *34* (1967Si03). $T_{1/2}$: from B(E2).

γ(^{130}Ba)

E_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α†	Comments
357.3	357.3	2^+	0.0	0^+	E2	0.0263	α(K)=0.02165; α(L)=0.00365; α(M)=0.00076; α(N+..)=0.00020

† 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.

Coulomb excitation

Level Scheme