^{129}I(n,γ) E=th 1989Sa11

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

1989Sa11: measured Eγ, Iγ, γγ, ce, γγ(t).
Others:
Additional information 1.
1996Na23: E=th. Measured $T_{1/2}$(^{130}I) and isomer production cross section.

^{130}I Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
0.0[@]	5^+		
39.9525 *13*	2^+	8.84 min *6*	$T_{1/2}$: from Adopted Levels.
43.251[@] *3*	$2^+,3^+$		
43.9362[b] *17*	$(3)^-$		
44.3269 *15*	3^+		
48.8327[&] *8*	4^+		
69.5865[b] *7*	$(6)^-$	133 ns *7*	
82.3960[b] *19*	$(8)^-$	315 ns *15*	
82.4+x		66 ns *8*	E(level): x<25 keV.
85.1099[a] *10*	$(6)^-$	254 ns *4*	
91.7605[b] *16*	$(4)^-$		
93.7143[&] *14*	3^+		
111.0607[b] *11*	$(5)^-$		
125.7595 *16*	4^+		
180.3001[b] *15*	$(7)^-$		
209.7392 *17*	$(3)^+$		
223.9761 *15*	3^+		
242.4+x?			
245.1019[a] *13*	$(5)^-$		
251.5496[@] *23*	3^+		
254.7947 *22*	$2^+,3^+$		
262.0513[@] *19*	4^+		
296.0376[a] *17*	$(4)^-$		
349.596 *4*	$(3)^+$		
353.731[a] *4*	$(3,4)^-$	<0.04 ns	
374.681 *3*	$3^+,4^+$	<7 ns	
378.3467 *22*	$(5)^-$	<0.07 ns	
437.638 *4*	$2^+,3^+$	<0.3 ns	
460.912 *6*	$(6)^-$		
480.7026 *20*	$(4)^-$	<0.1 ns	
525.881 *7*	3^+		
544.968 *5*	$3^+,4^+$	<0.8 ns	
593.993 *6*	$(4,5,6)^-$		
606.550 *10*	$(4^+,5^+)$	<0.6 ns	
678.491 *4*	$(4)^-$	<0.4 ns	
682.234 *4*	$(4)^-$	<0.2 ns	
699.206 *6*	$(5)^-$	<0.3 ns	
761.516 *7*	$(3,4,5)^-$	<0.2 ns	
768.415 *12*	$(3,4)^-$	<0.3 ns	
783.162 *9*	$(5,6)^-$		
804.07 *3*	$(4)^+$	<2 ns	

Continued on next page (footnotes at end of table)

^{129}I(n,γ) E=th 1989Sa11 (continued)

^{130}I Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
825.024 *22*	(4,5)$^-$	<1.4 ns	
876.261 *7*	(5)$^-$	<0.7 ns	
944.96 *3*	(4$^-$,5$^-$)	<2 ns	
1079.050 *9*	(4,5)$^-$	<0.9 ns	
(6500.361 *6*)	3$^+$,4$^+$		J$^{\pi}$: s-wave capture in ^{129}I(g.s. J$^{\pi}$=7/2$^+$).

[†] From least-squares adjustment to Eγ's.

[‡] From 1989Sa11 based on transition multipolarities assuming that for odd-odd nuclei the transitions of unknown multipolarity are not pure E2 or M2 for ΔJ=0 or 1 transitions and the primary gammas from the capture state are predominantly dipole.

[#] From $\gamma\gamma$(t). Values given as upper limits are about a factor of three lower than those in 1989Sa11, since these are adjusted here to one standard deviation limit rather than a limit of 3 standard deviations chosen by 1989Sa11.

[@] Band(A): Possible $\pi g_{7/2}\nu d_{3/2}$ multiplet.

[&] Band(B): Possible $\pi g_{7/2}\nu s_{1/2}$ multiplet.

[a] Band(C): Possible $\pi d_{5/2}\nu h_{11/2}$ multiplet.

[b] Band(D): Possible $\pi g_{7/2}\nu h_{11/2}$ multiplet.

^{129}I(n,γ) E=th 1989Sa11 (continued)

$\gamma(^{130}I)$

δ(E2/M1): upper limits estimated by 1989Sa11 from ce data.

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	$I_{(\gamma+ce)}$	Comments
(3.30)		43.251	2^+,3^+	39.9525	2^+	[M1]	563	<0.9	α(M)= 424 Mult.: from $\Delta\pi$ and RUL; Iγ(43.3)≤0.02, Ti(43.3)≤0.15. $I_{(\gamma+ce)}$: from intensity balance.
(3.98)		43.9362	$(3)^-$	39.9525	2^+	[E1]	55.5	<27	α(M)= 41.8 Mult.: from $\Delta\pi$ and RUL; Iγ(43.9)≤0.01, Ti(43.9)≤0.2. $I_{(\gamma+ce)}$: from intensity balance.
(4.37)		44.3269	3^+	39.9525	2^+	[M1]	242.6	<2.7	α(M)= 182.4 $I_{(\gamma+ce)}$: from intensity balance.
(12.81)		82.3960	$(8)^-$	69.5865	$(6)^-$	E2	1.166×10^4	<2.3	α(L)= 9130; α(M)= 1901 Mult.: α(exp)>80 from Iγ≤0.03 and I(γ+ce).
19.312 *12*	0.069 *7*	111.0607	$(5)^-$	91.7605	$(4)^-$	M1	13.48		α(L)= 10.64; α(M)= 2.133 α(L3)exp<70 δ:<0.18.
39.9542 *21*	0.0127 *10*	39.9525	2^+	0.0	5^+	M3	4.94×10^3		α(K)= 1194; α(L)= 2850; α(M)= 675 L3/L1=1.84 *4*, L3/L2=14.9 *7*, M3/M1=1.96 *5*, M3/M2=15.0 *17*.
41.4737 *9*	1.45 *16*	111.0607	$(5)^-$	69.5865	$(6)^-$	M1	9.73		α(K)= 8.33; α(L)= 1.101; α(M)= 0.2203 α(L1)exp=0.86 *12*; α(L2)exp=0.081 *19*; α(L3)exp=0.019 *3* α(M1)exp=0.174 *13*; α(M2)exp=0.017 *5*; α(N)exp=0.042 *4* δ:<0.014.
44.336 *15*	<0.15	44.3269	3^+	0.0	5^+	E2	35.0		α(K)= 10.28; α(L)= 19.25; α(M)= 4.09 Mult.: α(L2)exp>0.4, L1/L2<3. Observed in ce spectrum only.
44.8818 *19*	0.30 *5*	93.7143	3^+	48.8327	4^+	M1	7.72		α(K)= 6.62; α(L)= 0.872; α(M)= 0.1746 α(L1)exp=1.04 *19*; α(L2)exp<0.1; α(M1)exp=0.13 *3* δ:<0.045.
47.8242 *6*	2.59 *23*	91.7605	$(4)^-$	43.9362	$(3)^-$	M1	6.41		α(K)= 5.49; α(L)= 0.723; α(M)= 0.1449 α(K)exp=6.2 *13*; α(L1)exp=0.71 *9*; α(L2)exp=0.060 *8*; α(L3)exp=0.014 *3* α(M1)exp=0.137 *15*; α(M2)exp=0.019 *3*; α(N)exp=0.034 *4* δ:<0.018.
48.8325 *8*	1.35 *13*	48.8327	4^+	0.0	5^+	M1	6.03		α(K)= 5.16; α(L)= 0.680; α(M)= 0.1363 α(K)exp=4.4 *10*; α(L1)exp=0.63 *9*; α(L2)exp=0.056 *9* α(M1)exp=0.127 *16*; α(M2)exp=0.015 *6*; α(N)exp=0.027 *5* δ:<0.04.
49.389 *4*	0.132 *13*	93.7143	3^+	44.3269	3^+	M1	5.83		α(K)= 4.99; α(L)= 0.658; α(M)= 0.1319 α(L1)exp=0.75 *10*; α(L2)exp<0.2 δ:<0.1.
50.931 *6*	0.090 *12*	296.0376	$(4)^-$	245.1019	$(5)^-$	M1	5.31		α(K)= 4.56; α(L)= 0.601; α(M)= 0.1205; α(N+..)= 0.0296 α(L1)exp=0.64 *11*; α(L2)exp<0.2 δ:<0.12.

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^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
53.7613 *14*	0.53 *6*	93.7143	3^+	39.9525	2^+	M1	4.54	α(K)= 3.89; α(L)= 0.513; α(M)= 0.1029; α(N+..)= 0.0252 α(K)exp=3.6 *7*; α(L1)exp=0.49 *7*; α(L2)exp=0.042 *7*; α(L3)exp=0.023 *6*; α(M1)exp=0.081 *13* δ:<0.045.
69.5862 *7*	13.0 *9*	69.5865	$(6)^-$	0.0	5^+	E1	0.563	α(K)= 0.482; α(L)= 0.0654; α(M)=0.01299; α(N+..)=0.00300 α(K)exp=0.45 *4*; α(L1)exp=0.044 *4*; α(L3)exp=0.0125 *18* α(M1)exp=0.0096 *6*; α(M2)exp=0.0018 *3*; α(M3)exp=0.0028 *4*; α(N)exp=0.0025 *3*
76.923 *3*	0.157 *18*	125.7595	4^+	48.8327	4^+	M1	1.602	α(K)= 1.376; α(L)= 0.1805; α(M)= 0.0362; α(N+..)=0.00890 α(K)exp=1.18 *17*; α(L1)exp=0.146 *21*; α(L2)exp<0.04 δ:<0.15.
81.4331 *11*	0.66 *5*	125.7595	4^+	44.3269	3^+	M1	1.360	α(K)= 1.169; α(L)= 0.1529; α(M)= 0.0307; α(N+..)=0.00755 α(K)exp=1.04 *10*; α(L1)exp=0.121 *12*; α(L2)exp<0.015; α(M1)exp=0.023 *5* δ:<0.12.
83.005 *15*	0.047 *6*	761.516	$(3,4,5)^-$	678.491	$(4)^-$	M1	1.287	α(K)= 1.107; α(L)= 0.1446; α(M)= 0.0290; α(N+..)=0.00714 α(K)exp=1.32 *21*
85.1104 *10*	5.8 *4*	85.1099	$(6)^-$	0.0	5^+	E1	0.321	α(K)= 0.276; α(L)= 0.0366; α(M)=0.00727; α(N+..)=0.00169 α(K)exp=0.236 *20*; α(L1)exp=0.0241 *24*; α(L2)exp=0.0038 *6*; α(L3)exp=0.0052 *6* α(M1)exp=0.0047 *6*; α(M2)exp+α(M3)exp=0.0014 *4*; α(N)exp=0.0016 *4*
95.1902 *11*	0.270 *19*	180.3001	$(7)^-$	85.1099	$(6)^-$	M1	0.870	α(K)= 0.748; α(L)= 0.0976; α(M)=0.01959; α(N+..)=0.00481 α(K)exp=0.75 *7*; α(L1)exp=0.094 *9*; α(L2)exp<0.02 δ:<0.18.
97.9040 *12*	0.63 *4*	180.3001	$(7)^-$	82.3960	$(8)^-$	M1	0.803	α(K)= 0.691; α(L)= 0.0901; α(M)=0.01807; α(N+..)=0.00444 α(K)exp=0.70 *12*; α(L1)exp=0.094 *15*; α(L2)exp<0.01 δ:<0.14.
102.3585 *20*	0.64 *5*	480.7026	$(4)^-$	378.3467	$(5)^-$	M1	0.708	α(K)= 0.609; α(L)= 0.0794; α(M)=0.01592; α(N+..)=0.00391 α(K)exp=0.60 *7*; α(L1)exp=0.070 *12*; α(L2)exp<0.01; α(M1)exp=0.013 *3* δ:<0.15.
105.195 *11*	0.045 *11*	699.206	$(5)^-$	593.993	$(4,5,6)^-$	M1	0.655	α(K)= 0.563; α(L)= 0.0735; α(M)=0.01472; α(N+..)=0.00362 α(K)exp=0.44 *12*
112.632 *7*	0.050 *8*	374.681	$3^+,4^+$	262.0513	4^+	M1	0.540	α(K)= 0.464; α(L)= 0.0606; α(M)=0.01212; α(N+..)=0.00298 α(K)exp=0.42 *10*
116.009 *12*	0.035 *3*	209.7392	$(3)^+$	93.7143	3^+	M1	0.496	α(K)= 0.427; α(L)= 0.0557; α(M)=0.01115; α(N+..)=0.00274 α(K)exp=0.34 *6*
125.759 *3*	2.37 *12*	125.7595	4^+	0.0	5^+	M1	0.396	α(K)= 0.340; α(L)= 0.0443; α(M)=0.00888; α(N+..)=0.00218 α(K)exp=0.362 *16*; α(L1)exp=0.043 *3*; α(L2)exp=0.0078 *9*; α(L3)exp=0.0068 *9*
125.790 *9*	0.24 *5*	251.5496	3^+	125.7595	4^+	[M1,E2]	0.59 *20*	
[x]129.189 *7*	0.039 *7*					M1,E2		α(K)exp=0.41 *9*
130.263 *4*	0.149 *14*	223.9761	3^+	93.7143	3^+	M1	0.358	α(K)= 0.308; α(L)= 0.0401; α(M)=0.00804; α(N+..)=0.00197 α(K)exp=0.27 *4*

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^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
132.215 *3*	0.124 *10*	223.9761	3^+	91.7605	$(4)^-$	E1	0.0935	α(K)= 0.0806; α(L)=0.01035; α(M)=0.00206; α(N+..)=0.00049 α(K)exp=0.08 *3*
150.694 *12*	0.033 *6*	374.681	3^+,4^+	223.9761	3^+	M1,E2	0.33 *11*	α(K)exp=0.031 *8*
[x]151.422 *7*	0.035 *5*							
153.3396 *15*	0.87 *6*	245.1019	$(5)^-$	91.7605	$(4)^-$	M1	0.2278	α(K)= 0.1961; α(L)= 0.0254; α(M)=0.00509; α(N+..)=0.00125 α(K)exp=0.209 *18*; α(L1)exp=0.0201 *23*; α(L2)exp<0.006 δ:<0.3.
157.832 *5*	0.254 *19*	251.5496	3^+	93.7143	3^+	M1	0.2103	α(K)= 0.1811; α(L)=0.02343; α(M)=0.00470; α(N+..)=0.00115 α(K)exp=0.15 *3*
159.956 *9*	0.97 *16*	242.4+x?		82.4+x				
159.9921 *12*	4.4 *3*	245.1019	$(5)^-$	85.1099	$(6)^-$	M1	0.2026	α(K)= 0.1744; α(L)=0.02256; α(M)=0.00453; α(N+..)=0.00111 α(K)exp=0.168 *10*; α(L1)exp=0.0196 *16*; α(L2)exp<0.002; α(M1)exp=0.0036 *5* δ:<0.18.
160.909 *10*	0.031 *7*	209.7392	$(3)^+$	48.8327	4^+			
164.938 *4*	0.262 *24*	374.681	3^+,4^+	209.7392	$(3)^+$	M1	0.1862	α(K)= 0.1603; α(L)=0.02074; α(M)=0.00416; α(N+..)=0.00102 α(K)exp=0.160 *19*; α(L1)exp=0.019 *5*
165.4124 *21*	0.417 *24*	209.7392	$(3)^+$	44.3269	3^+	M1	0.1848	α(K)= 0.1590; α(L)=0.02057; α(M)=0.00413; α(N+..)=0.00101 α(K)exp=0.155 *11*; α(L1)exp=0.024 *5*
166.486 *3*	0.389 *23*	209.7392	$(3)^+$	43.251	2^+,3^+	M1	0.1815	α(K)= 0.1562; α(L)=0.02021; α(M)=0.00405; α(N+..)= 0.0010 α(K)exp=0.141 *13*; α(L1)exp=0.015 *4*
168.3370 *15*	1.26 *5*	262.0513	4^+	93.7143	3^+	M1	0.1760	α(K)= 0.1515; α(L)= 0.0196; α(M)=0.00393; α(N+..)=0.00097 α(K)exp=0.146 *9*; α(L1)exp=0.0190 *22*; α(L2)exp<0.004 δ:<0.3.
169.7863 *15*	2.42 *12*	209.7392	$(3)^+$	39.9525	2^+	M1	0.1719	α(K)= 0.1480; α(L)=0.01914; α(M)=0.00384; α(N+..)=0.00094 α(K)exp=0.128 *10*; α(L1)exp=0.0174 *19*; α(L2)exp<0.002; α(M1)exp=0.0046 *9* δ:<0.2.
175.137 *5*	0.39 *3*	223.9761	3^+	48.8327	4^+	M1	0.1579	α(K)= 0.1359; α(L)=0.01757; α(M)=0.00353; α(N+..)=0.00087 α(K)exp=0.114 *11*; α(L1)exp=0.015 *3*
175.515 *7*	0.272 *15*	245.1019	$(5)^-$	69.5865	$(6)^-$	M1	0.1569	α(K)= 0.1351; α(L)=0.01747; α(M)=0.00350; α(N+..)=0.00086 α(K)exp=0.121 *12*; α(L1)exp=0.017 *5*
[x]177.688 *5*	0.144 *12*					M1	0.1517	α(K)= 0.1306; α(L)=0.01689; α(M)=0.00339; α(N+..)=0.00083 α(K)exp=0.110 *16*
179.643 *3*	0.373 *17*	223.9761	3^+	44.3269	3^+	M1	0.1472	α(K)= 0.1268; α(L)=0.01639; α(M)=0.00329; α(N+..)=0.00081 α(K)exp=0.131 *10*; α(L1)exp=0.025 *4*
180.041 *7*	0.090 *14*	223.9761	3^+	43.9362	$(3)^-$	E1	0.0395	α(K)= 0.0342; α(L)=0.00431; α(M)=0.00086; α(N+..)=0.00020 α(K)exp<0.07
180.738 *16*	0.029 *6*	223.9761	3^+	43.251	2^+,3^+			
184.0249 *15*	2.10 *8*	223.9761	3^+	39.9525	2^+	M1	0.1379	α(K)= 0.1187; α(L)=0.01534; α(M)=0.00308; α(N+..)=0.00076 α(K)exp=0.124 *7*; α(L1)exp=0.0144 *11*; α(M1)exp=0.0036 *8*
184.673 *12*	0.40 *13*	480.7026	$(4)^-$	296.0376	$(4)^-$			
184.9756 *15*	6.4 *3*	296.0376	$(4)^-$	111.0607	$(5)^-$	M1	0.1359	α(K)= 0.1170; α(L)=0.01513; α(M)=0.00303; α(N+..)=0.00075 α(K)exp=0.115 *4*; α(L1)exp=0.0141 *8*; α(M1)exp=0.0035 *4*

$^{130}_{53}I_{77}$-5

^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	α @	Comments
186.090 *5*	0.288 *13*	437.638	$2^+,3^+$	251.5496	3^+	M1	0.1337	α(K)= 0.1151; α(L)=0.01488; α(M)=0.00298; α(N+..)=0.00073 α(K)exp=0.102 *7*; α(L1)exp=0.016 *4*
194.04 *4*	0.029 *12*	876.261	$(5)^-$	682.234	$(4)^-$			
x196.171 *23*	0.033 *9*							
197.790 *6*	0.102 *8*	678.491	$(4)^-$	480.7026	$(4)^-$			
201.531 *3*	0.340 *13*	682.234	$(4)^-$	480.7026	$(4)^-$	M1	0.1078	α(K)= 0.0929; α(L)=0.01198; α(M)=0.00240; α(N+..)=0.00059 α(K)exp=0.086 *6*
202.727 *8*	0.164 *21*	251.5496	3^+	48.8327	4^+	M1	0.1061	α(K)= 0.0914; α(L)=0.01178; α(M)=0.00236; α(N+..)=0.00058 α(K)exp=0.094 *7*
202.790 *14*	0.159 *23*	1079.050	$(4,5)^-$	876.261	$(5)^-$	M1	0.1060	α(K)= 0.0913; α(L)=0.01177; α(M)=0.00236; α(N+..)=0.00058 α(K)exp=0.094 *7*
204.284 *4*	0.253 *9*	296.0376	$(4)^-$	91.7605	$(4)^-$	M1	0.1040	α(K)= 0.0895; α(L)=0.01154; α(M)=0.00231; α(N+..)=0.00057 α(K)exp=0.091 *6*
207.221 *4*	0.300 *13*	251.5496	3^+	44.3269	3^+	M1	0.1001	α(K)= 0.0862; α(L)=0.01110; α(M)=0.00222; α(N+..)=0.00055 α(K)exp=0.087 *6*
211.598 *3*	1.33 *4*	251.5496	3^+	39.9525	2^+	M1	0.0946	α(K)= 0.0815; α(L)=0.01049; α(M)=0.00210; α(N+..)=0.00052 α(K)exp=0.080 *4*; α(L1)exp=0.0090 *23*
213.218 *8*	0.094 *17*	262.0513	4^+	48.8327	4^+			
x213.769 *8*	0.134 *11*					M1	0.0921	α(K)= 0.0793; α(L)=0.01021; α(M)=0.00204; α(N+..)=0.00050 α(K)exp=0.064 *12*
214.8422 *18*	1.40 *5*	254.7947	$2^+,3^+$	39.9525	2^+	M1	0.0909	α(K)= 0.0783; α(L)=0.01007; α(M)=0.00202; α(N+..)=0.00050 α(K)exp=0.078 *3*; α(L1)exp=0.0089 *11*
215.641 *6*	0.114 *17*	593.993	$(4,5,6)^-$	378.3467	$(5)^-$	M1,E2	0.105 *16*	α(K)exp=0.090 *21*
217.726 *5*	0.183 *18*	262.0513	4^+	44.3269	3^+	M1,E2	0.102 *15*	α(K)exp=0.092 *11*
x218.138 *8*	0.101 *9*					M1,E2		α(K)exp=0.117 *22*
223.980 *7*	0.113 *13*	223.9761	3^+	0.0	5^+	(E2)	0.1061	α(K)= 0.0857; α(L)=0.01629; α(M)=0.00334; α(N+..)=0.00079 α(K)exp=0.097 *17* Mult.: M1,E2 from ce data. ΔJ rules out M1.
227.882 *10*	0.078 *8*	437.638	$2^+,3^+$	209.7392	$(3)^+$			
x231.36 *4*	0.046 *9*							
x231.76 *4*	0.049 *11*							
235.5986 *20*	2.75 *13*	480.7026	$(4)^-$	245.1019	$(5)^-$	M1	0.0711	α(K)= 0.0613; α(L)=0.00785; α(M)=0.00157; α(N+..)=0.00039 α(K)exp=0.057 *8*; α(L1)exp=0.0071 *7*; α(L2)exp<0.002
x236.73 *4*	0.071 *10*							
238.2950 *22*	0.60 *4*	699.206	$(5)^-$	460.912	$(6)^-$	M1,E2	0.078 *14*	α(K)exp=0.059 *10*
240.82& *4*	0.032 *7*	678.491	$(4)^-$	437.638	$2^+,3^+$			
252.105 *16*	0.062 *7*	296.0376	$(4)^-$	43.9362	$(3)^-$			
256.724& *16*	0.069 *6*	480.7026	$(4)^-$	223.9761	3^+			
x260.221 *9*	0.130 *8*					M1,E2		α(K)exp=0.040 *10*
262.039 *12*	0.203 *11*	262.0513	4^+	0.0	5^+	M1,E2	0.058 *5*	α(K)exp=0.039 *7*
271.104 *18*	0.100 *9*	525.881	3^+	254.7947	$2^+,3^+$	M1,E2	0.052 *3*	α(K)exp=0.047 *11*
274.328 *8*	0.121 *10*	525.881	3^+	251.5496	3^+			
280.614 *6*	1.10 *8*	460.912	$(6)^-$	180.3001	$(7)^-$	M1,E2	0.047 *3*	α(K)exp=0.039 *7*; α(L1)exp=0.0072 *16*

$^{130}_{53}I_{77}$-6

^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	α@	Comments
280.835 *16*	0.161 *17*	761.516	(3,4,5)$^-$	480.7026	(4)$^-$	M1,E2	0.047 *3*	α(K)exp=0.036 *8*
x284.214 *19*	0.087 *13*							
286.588 *3*	1.90 *11*	378.3467	(5)$^-$	91.7605	(4)$^-$	M1,E2	0.045 *2*	α(K)exp=0.035 *3*; α(L1)exp=0.0037 *7*
x286.96 *3*	0.090 *17*							
293.242 *5*	0.50 *5*	378.3467	(5)$^-$	85.1099	(6)$^-$	M1,E2	0.042 *2*	α(K)exp=0.032 *5*
293.421 *20*	0.161 *25*	544.968	3$^+$,4$^+$	251.5496	3$^+$			
306.350 *6*	0.26 *4*	349.596	(3)$^+$	43.251	2$^+$,3$^+$	M1,E2	0.037 *1*	α(K)exp=0.042 *9*
309.640 *4*	0.74 *5*	349.596	(3)$^+$	39.9525	2$^+$			
309.794 *3*	5.03 *14*	353.731	(3,4)$^-$	43.9362	(3)$^-$	M1,E2	0.035	α(K)exp=0.0289 *12*; α(L1)exp=0.0034 *4*
317.532 *6*	0.79 *4*	1079.050	(4,5)$^-$	761.516	(3,4,5)$^-$	M1,E2	0.033	α(K)exp=0.0267 *24*
320.990 *5*	0.325 *17*	544.968	3$^+$,4$^+$	223.9761	3$^+$	M1,E2	0.032	α(K)exp=0.030 *4*
322.248 *7*	0.180 *17*	783.162	(5,6)$^-$	460.912	(6)$^-$	M1,E2	0.032	α(K)exp=0.027 *6*
x322.74 *3*	0.086 *16*							
323.33& *6*	0.070 *12*	804.07	(4)$^+$	480.7026	(4)$^-$			
324.772 *12*	0.145 *13*	678.491	(4)$^-$	353.731	(3,4)$^-$	M1,E2	0.031	α(K)exp=0.032 *8*
325.850 *5*	0.70 *3*	374.681	3$^+$,4$^+$	48.8327	4$^+$	M1,E2	0.031	α(K)exp=0.0269 *20*
328.497 *8*	0.164 *17*	682.234	(4)$^-$	353.731	(3,4)$^-$	M1,E2	0.30	α(K)exp=0.033 *8*
330.356 *4*	0.508 *25*	374.681	3$^+$,4$^+$	44.3269	3$^+$	M1,E2	0.030	α(K)exp=0.032 *5*
331.27& *3*	0.106 *13*	876.261	(5)$^-$	544.968	3$^+$,4$^+$			
334.73& *5*	0.074 *12*	374.681	3$^+$,4$^+$	39.9525	2$^+$			
335.28 *4*	0.086 *16*	544.968	3$^+$,4$^+$	209.7392	(3)$^+$			
x366.810 *6*	0.390 *19*					M1,E2		α(K)exp=0.021 *3*
369.638 *12*	0.59 *3*	480.7026	(4)$^-$	111.0607	(5)$^-$	M1,E2		α(K)exp=0.019 *3*
374.64& *4*	0.086 *13*	374.681	3$^+$,4$^+$	0.0	5$^+$			
x375.632 *17*	0.179 *25*							
382.446 *6*	0.68 *4*	678.491	(4)$^-$	296.0376	(4)$^-$	M1,E2		α(K)exp=0.0187 *21*
386.182 *18*	0.63 *3*	682.234	(4)$^-$	296.0376	(4)$^-$	M1,E2		α(K)exp=0.020 *3*
388.932 *14*	0.152 *17*	480.7026	(4)$^-$	91.7605	(4)$^-$			
393.294 *15*	0.140 *17*	437.638	2$^+$,3$^+$	44.3269	3$^+$	M1,E2		α(K)exp=0.031 *9*
394.382 *14*	0.163 *25*	437.638	2$^+$,3$^+$	43.251	2$^+$,3$^+$	M1,E2		α(K)exp=0.027 *7*
395.555 *7*	0.48 *3*	876.261	(5)$^-$	480.7026	(4)$^-$	M1,E2		α(K)exp=0.016 *3*
397.695 *8*	0.33 *4*	437.638	2$^+$,3$^+$	39.9525	2$^+$	M1,E2		α(K)exp=0.0191 *23*
400.10 *5*	0.124 *17*	525.881	3$^+$	125.7595	4$^+$			
414.680 *12*	0.51 *4*	768.415	(3,4)$^-$	353.731	(3,4)$^-$	M1,E2		α(K)exp=0.019 *3*
x415.25 *5*	0.113 *20*							
416.47& *3*	0.089 *16*	678.491	(4)$^-$	262.0513	4$^+$			
x419.101 *20*	0.27 *3*					M1,E2		α(K)exp=0.018 *4*
x424.16 *4*	0.140 *17*							
426.94& *4*	0.120 *13*	678.491	(4)$^-$	251.5496	3$^+$			
433.392 *17*	0.93 *4*	678.491	(4)$^-$	245.1019	(5)$^-$	M1,E2		α(K)exp=0.0126 *24*
x435.96 *5*	0.074 *24*							
436.760 *11*	0.33 *3*	480.7026	(4)$^-$	43.9362	(3)$^-$			

$^{130}_{53}I_{77}$-7

^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
[x]440.042 *11*	0.434 *23*					M1,E2	α(K)exp=0.015 *3*
446.676 *21*	0.364 *24*	825.024	$(4,5)^-$	378.3467	$(5)^-$	M1,E2	α(K)exp=0.012 *3*
454.47 *6*	0.116 *24*	804.07	$(4)^+$	349.596	$(3)^+$		
[x]459.463 *14*	0.28 *3*						
464.33 *8*	0.19 *4*	944.96	$(4^-,5^-)$	480.7026	$(4)^-$		
465.476 *10*	1.91 *9*	761.516	$(3,4,5)^-$	296.0376	$(4)^-$	M1,E2	α(K)exp=0.0115 *13*
[x]468.836 *18*	0.178 *17*						
480.791 *12*	0.27 *5*	606.550	$(4^+,5^+)$	125.7595	4^+		
[x]484.84 *9*	0.31 *5*						
485.926 *16*	0.40 *4*	525.881	3^+	39.9525	2^+		
[x]489.200 *14*	0.28 *3*						
496.14 *3*	0.250 *22*	544.968	$3^+,4^+$	48.8327	4^+		
[x]513.01 *7*	0.27 *5*						
[x]526.394 *18*	0.29 *9*						
[x]527.98 *4*	0.149 *20*						
[x]548.16 *3*	0.171 *24*						
[x]553.916 *10*	0.53 *5*						
[x]555.06 *7*	0.18 *5*						
[x]560.41 *8*	0.110 *16*						
[x]562.29 *10*	0.117 *24*						
[x]565.42 *4*	0.230 *25*						
566.55 *4*	0.24 *3*	944.96	$(4^-,5^-)$	378.3467	$(5)^-$		
567.435 *16*	1.62 *17*	678.491	$(4)^-$	111.0607	$(5)^-$		
[x]568.837 *21*	0.43 *3*						
[x]574.276 *15*	0.53 *3*						
580.14 *4*	0.20 *3*	804.07	$(4)^+$	223.9761	3^+		
[x]588.43 *11*	0.128 *23*						
591.24 *5*	0.26 *3*	944.96	$(4^-,5^-)$	353.731	$(3,4)^-$		
[x]598.76 *9*	0.25 *3*						
606.545 *15*	0.57 *3*	606.550	$(4^+,5^+)$	0.0	5^+		
[x]615.62 *4*	0.16 *3*						
[x]624.82 *5*	0.19 *3*						
629.65 *3*	0.377 *24*	699.206	$(5)^-$	69.5865	$(6)^-$		
631.26 *6*	0.177 *20*	876.261	$(5)^-$	245.1019	$(5)^-$		
634.515 *23*	0.48 *3*	678.491	$(4)^-$	43.9362	$(3)^-$		
638.331 *16*	0.72 *4*	682.234	$(4)^-$	43.9362	$(3)^-$		
[x]645.453 *24*	0.50 *7*						
672.12 *3*	0.50 *4*	783.162	$(5,6)^-$	111.0607	$(5)^-$		
676.68 *6*	0.21 *3*	768.415	$(3,4)^-$	91.7605	$(4)^-$		
[x]677.68 *5*	0.34 *3*						
698.10 *6*	0.216 *24*	783.162	$(5,6)^-$	85.1099	$(6)^-$		
[x]706.63 *4*	0.33 *6*						
[x]713.72 *7*	0.33 *5*						
724.49 *3*	0.72 *5*	768.415	$(3,4)^-$	43.9362	$(3)^-$		

$^{130}_{53}I_{77}$-8

^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π
725.40 *7*	0.36 *4*	1079.050	$(4,5)^-$	353.731	$(3,4)^-$
[x]742.00 *9*	0.49 *11*				
[x]746.90 *9*	0.31 *5*				
[x]749.84 *7*	0.41 *5*				
[x]750.70 *6*	0.52 *4*				
[x]771.52 *7*	0.45 *8*				
[x]775.10 *5*	0.40 *3*				
791.24 *7*	0.51 *11*	876.261	$(5)^-$	85.1099	$(6)^-$
[x]794.64 *7*	0.41 *4*				
803.99 *7*	0.22 *5*	804.07	$(4)^+$	0.0	5^+
[x]808.38 *5*	0.46 *6*				
[x]812.11 *7*	0.39 *6*				
[x]832.49 *13*	0.39 *7*				
853.24 *5*	0.69 *8*	944.96	$(4^-,5^-)$	91.7605	$(4)^-$
[x]898.57 *8*	0.51 *4*				
[x]927.27 *16*	0.59 *6*				
[x]961.82 *7*	0.61 *16*				
[x]985.10 *18*	0.60 *22*				
[x]5395.85 *7*	1.23[#] *11*				
5421.223 *17*	18.3[#] *15*	(6500.361)	$3^+,4^+$	1079.050	$(4,5)^-$
[x]5460.2 *3*	0.34[#] *5*				
[x]5464.01 *8*	1.50[#] *13*				
[x]5482.01 *10*	0.95[#] *9*				
[x]5494.47 *3*	5.1[#] *4*				
[x]5505.8 *9*	0.22[#] *7*				
[x]5529.34 *24*	2.02[#] *23*				
[x]5538.0 *5*	0.46[#] *9*				
5555.22 *15*	4.1[#] *5*	(6500.361)	$3^+,4^+$	944.96	$(4^-,5^-)$
[x]5576.11 *14*	0.82[#] *8*				
[x]5581.76 *10*	2.26[#] *20*				
[x]5616.2 *3*	0.30[#] *5*				
5623.95 *5*	2.23[#] *19*	(6500.361)	$3^+,4^+$	876.261	$(5)^-$
[x]5636.4 *3*	0.29[#] *5*				
[x]5645.14 *19*	0.42[#] *5*				
[x]5657.8 *4*	0.18[#] *5*				
[x]5663.9 *4*	0.18[#] *4*				
[x]5672.0 *3*	0.63[#] *8*				
5675.16 *6*	3.3[#] *3*	(6500.361)	$3^+,4^+$	825.024	$(4,5)^-$

$^{130}_{53}I_{77}$-9

^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π
x5705.0 5	0.50# 12				
x5727.7 8	0.73# 19				
5731.99 9	1.5# 4	(6500.361)	$3^+,4^+$	768.415	$(3,4)^-$
5738.36 7	0.60# 9	(6500.361)	$3^+,4^+$	761.516	$(3,4,5)^-$
x5756.8 7	0.11# 3				
5801.06 10	1.44# 13	(6500.361)	$3^+,4^+$	699.206	$(5)^-$
x5809.7 4	0.25# 4				
5818.9 11	0.29# 14	(6500.361)	$3^+,4^+$	682.234	$(4)^-$
5821.734 17	31# 3	(6500.361)	$3^+,4^+$	678.491	$(4)^-$
x5830.6 3	0.52# 7				
x5854.5 9	0.09# 3				
x5865.8 3	0.27# 3				
x5890.70 13	0.82# 7				
x5920.9 3	0.27# 3				
5955.32 6	1.75# 18	(6500.361)	$3^+,4^+$	544.968	$3^+,4^+$
x5971.16 19	0.43# 5				
6019.496 14	24.1# 19	(6500.361)	$3^+,4^+$	480.7026	$(4)^-$
6063.3 6	0.14# 3	(6500.361)	$3^+,4^+$	437.638	$2^+,3^+$
6121.9 5	0.49# 10	(6500.361)	$3^+,4^+$	378.3467	$(5)^-$
6125.50 6	4.8# 4	(6500.361)	$3^+,4^+$	374.681	$3^+,4^+$
6146.488 16	14.3# 11	(6500.361)	$3^+,4^+$	353.731	$(3,4)^-$
6151.7 10	0.12# 4	(6500.361)	$3^+,4^+$	349.596	$(3)^+$
6204.156 15	14.0# 11	(6500.361)	$3^+,4^+$	296.0376	$(4)^-$
x6210.0 6	0.17# 3				
6237.5 5	0.16# 3	(6500.361)	$3^+,4^+$	262.0513	4^+
6249.3 5	0.20# 4	(6500.361)	$3^+,4^+$	251.5496	3^+
6254.99 4	2.73# 21	(6500.361)	$3^+,4^+$	245.1019	$(5)^-$
6276.42 23	0.70# 8	(6500.361)	$3^+,4^+$	223.9761	3^+
x6307.8 3	0.37# 6				
6374.41 12	1.50# 15	(6500.361)	$3^+,4^+$	125.7595	4^+
x6385.3 8	0.22# 6				
6389.8 6	0.34# 6	(6500.361)	$3^+,4^+$	111.0607	$(5)^-$
x6394.2 6	0.28# 6				
6408.434 12	70# 5	(6500.361)	$3^+,4^+$	91.7605	$(4)^-$
6451.47 7	2.21# 17	(6500.361)	$3^+,4^+$	48.8327	4^+

$^{130}_{53}I_{77}$-10

^{129}I(n,γ) E=th 1989Sa11 (continued)

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

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
6455.97 *7*	3.5[#] *3*	(6500.361)	$3^+,4^+$	44.3269	3^+	E_γ: possible doublet.
6460.44 *12*	1.50[#] *12*	(6500.361)	$3^+,4^+$	39.9525	2^+	
[x]6465.4 *3*	0.34[#] *4*					
6499.6 *5*	0.117[#] *23*	(6500.361)	$3^+,4^+$	0.0	5^+	

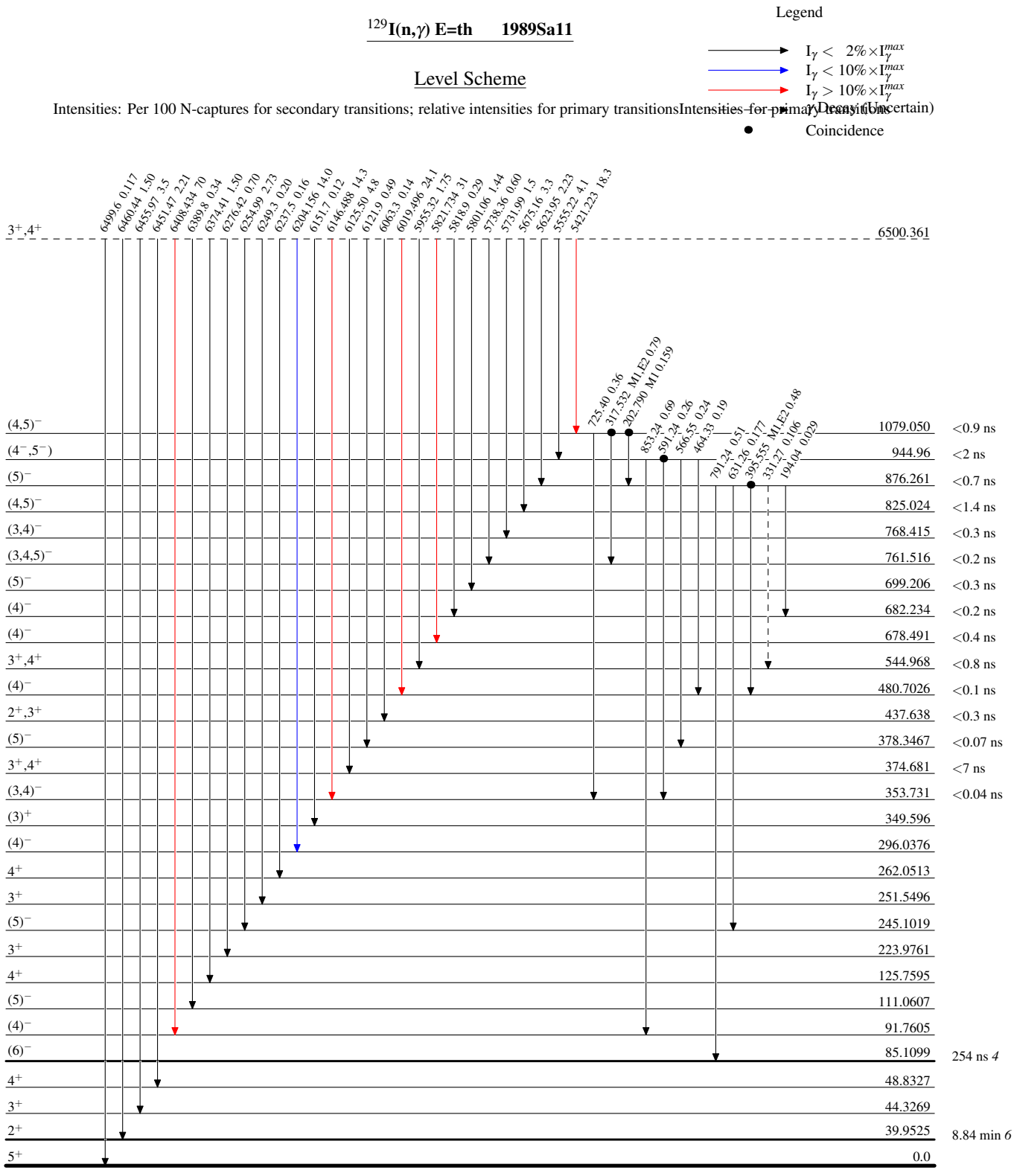
[†] From ce data.
[‡] Per 100 n captures for secondary gammas, relative intensities for primary gammas. The two scales are not matched.
[#] Relative intensity on an arbitrary scale.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[&] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{130}_{53}I_{77}$-11

^{129}I(n,γ) E=th 1989Sa11

Level Scheme

Intensities: Per 100 N-captures for secondary transitions; relative intensities for primary transitions

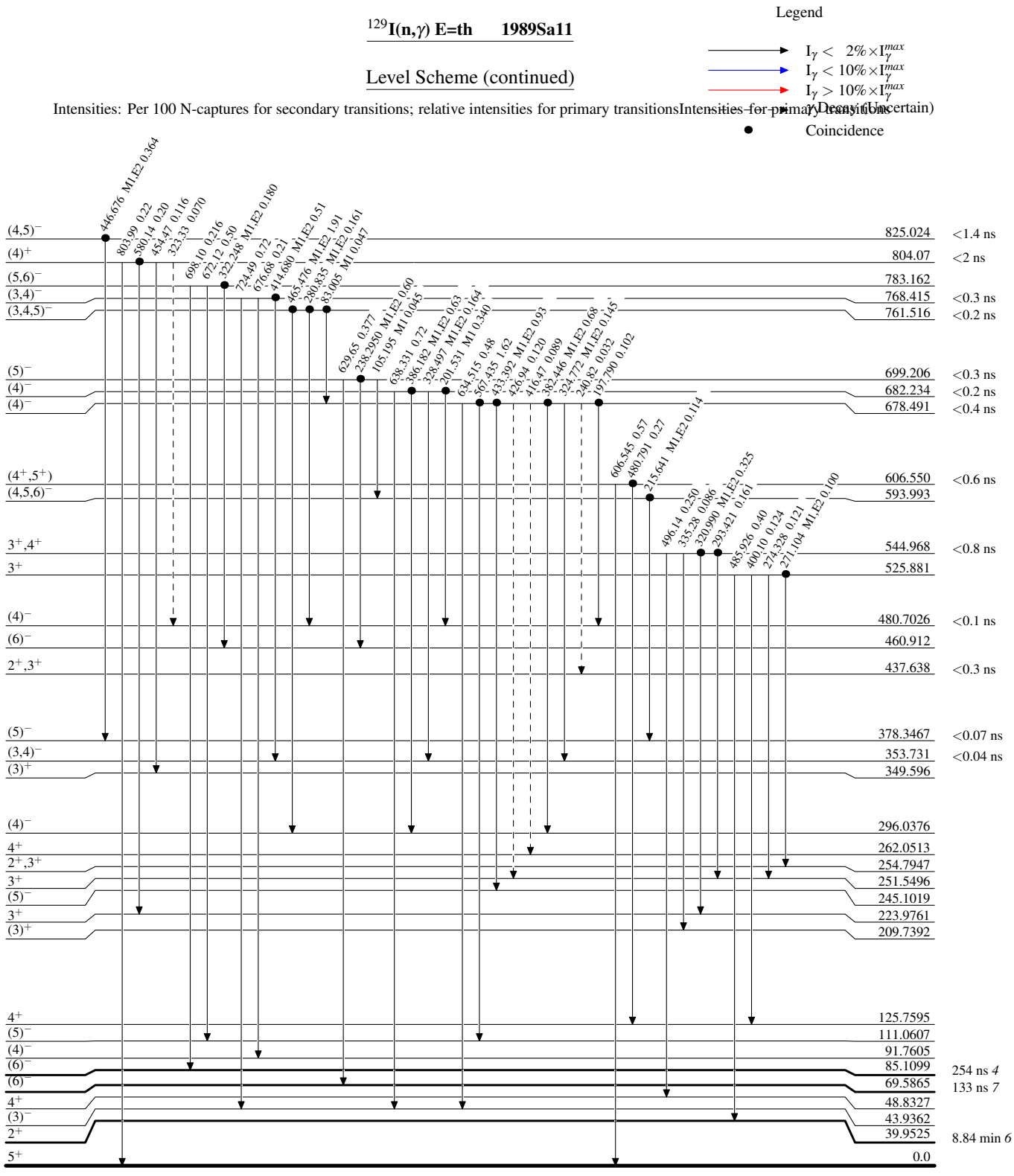


$^{130}_{53}I_{77}$

^{129}I(n,γ) E=th 1989Sa11

Level Scheme (continued)

Intensities: Per 100 N-captures for secondary transitions; relative intensities for primary transitions

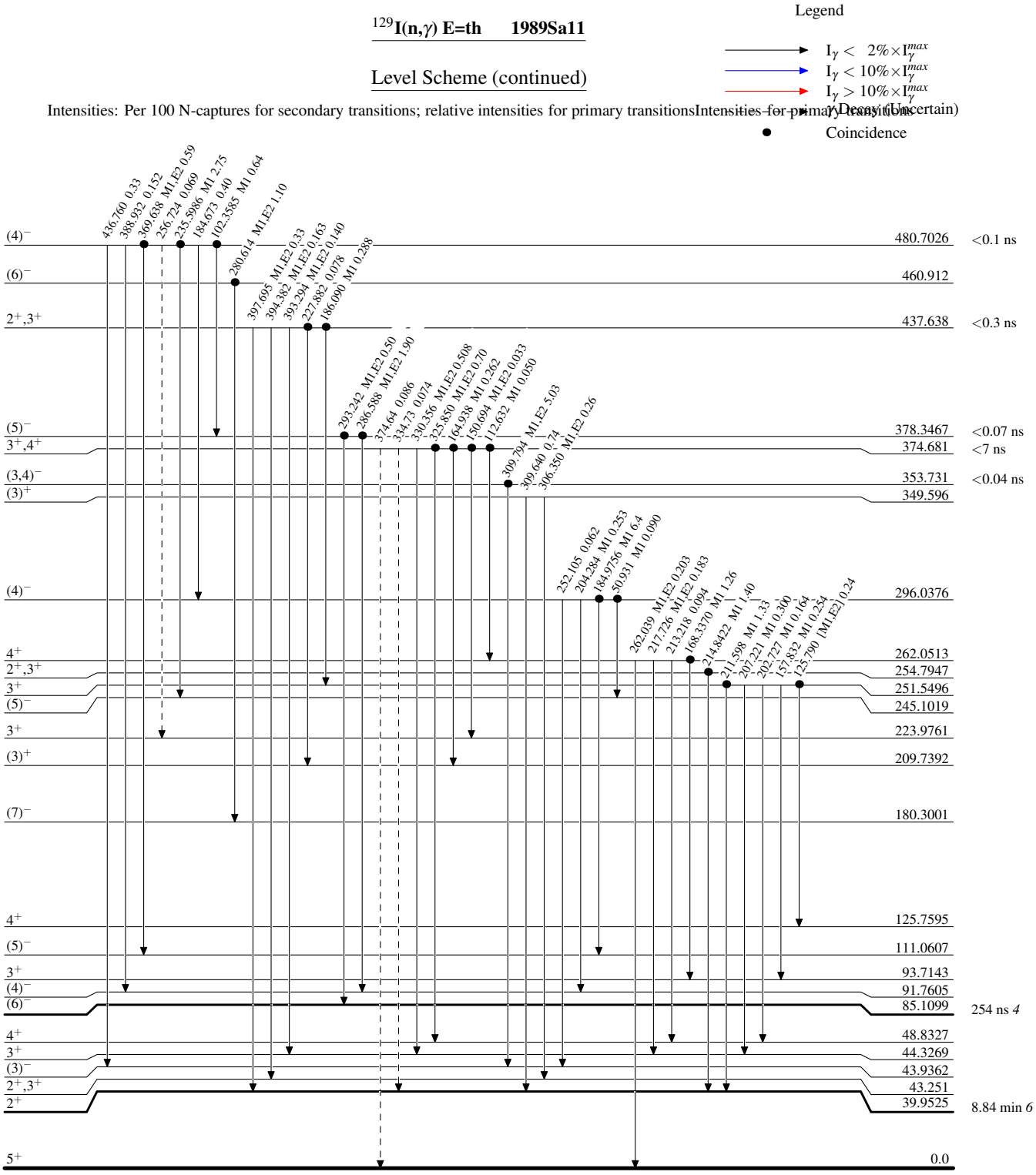


$^{130}_{53}I_{77}$

^{129}I(n,γ) E=th 1989Sa11

Level Scheme (continued)

Intensities: Per 100 N-captures for secondary transitions; relative intensities for primary transitions

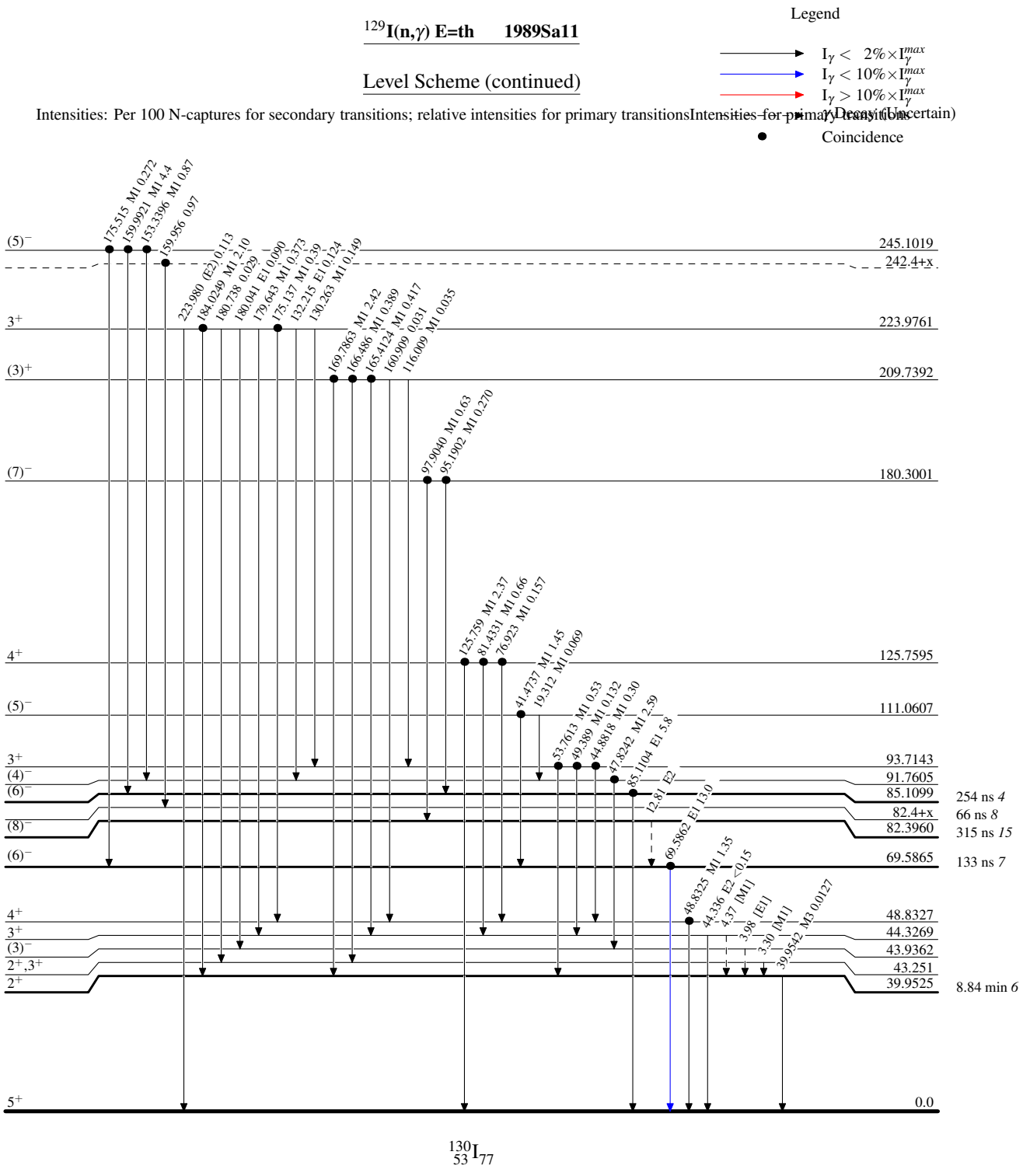


$^{130}_{53}I_{77}$

^{129}I(n,γ) E=th 1989Sa11

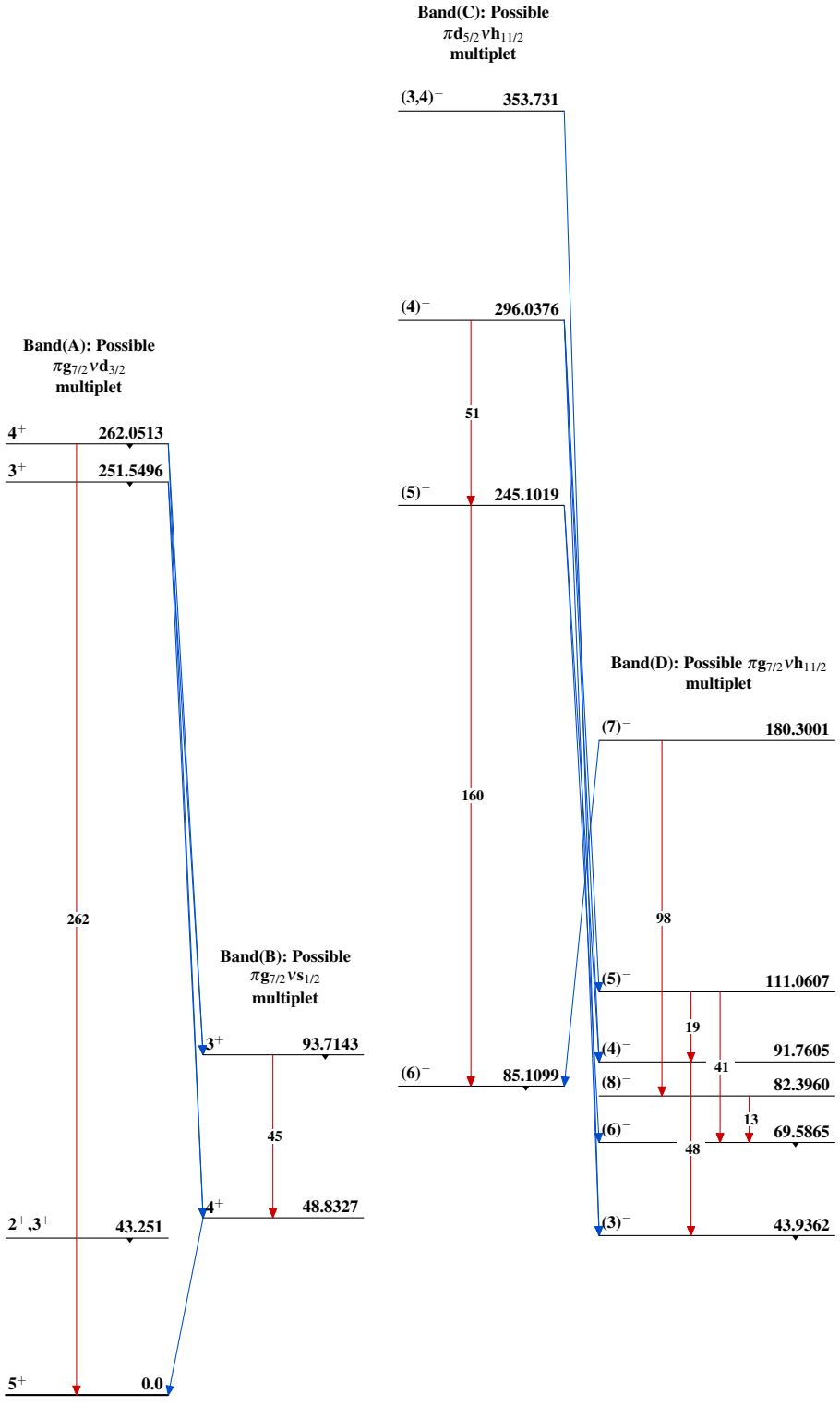
Level Scheme (continued)

Intensities: Per 100 N-captures for secondary transitions; relative intensities for primary transitions



$^{130}_{53}I_{77}$

^{129}I(n,γ) E=th 1989Sa11



$^{130}_{53}I_{77}$