Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 103,1 (2004)	31-Jul-2004

Q(β^-)=−5.36×10^3 *syst*; S(n)=9.40×10^3 *8*; S(p)=1.70×10^3 *8*; Q(α)=2.01×10^3 *9* 2012Wa38
Note: Current evaluation has used the following Q record −5232.0 SY9.40E+3 *8* 1700 *70* 2010 *90* 2003Au03.
ΔQ(β^-)=204 (2003Au03).

^{134}Pm Levels

Bands: as given by 1991Wa09 and based on theoretical predictions.

Cross Reference (XREF) Flags

A ^{134}Sm ε decay
B (HI,xnγ)

E(level)	J$^\pi$&	T$_{1/2}$	XREF	Comments
0.0†	(2$^+$)	≈5 s	AB	%ε+%β^+=100 J$^\pi$: ε decay to 2$^+$, (3$^+$); systematics. T$_{1/2}$: from 1988KeZX. T$_{1/2}$=3 to 20 s (1989Vi04).
0.0+x†	(5$^+$)	22 s *1*		%ε+%β^+=100 No IT decay observed. J$^\pi$: ε decay to 4$^+$, 6$^+$; systematics. T$_{1/2}$: weighted average of 24 s *2* (1977Bo02), 21 s *1* (1988BeYG), and 23 s *2* (1990Ko25).
112.30 *18*			A	
118.90 *13*	(1$^+$)		A	J$^\pi$: log *ft*≈4.2 from 0$^+$.
229.11 *14*			A	
280.03 *15*			A	
304.71 *23*			A	
409.4 *4*			A	
418.93 *19*			A	
498.96 *19*			A	
537.4 *4*			A	
887.4 *4*			A	
0.0+y‡	(7$^-$)		B	J$^\pi$: theoretical predictions, configuration=((π g$_{7/2}$)(ν h$_{11/2}$)).
106.19+y‡ *18*	(8$^-$)		B	
215.02+y‡ *20*	(9$^-$)		B	
272.00+y# *20*	(8$^+$)		B	J$^\pi$: systematics and theoretical predictions, configuration=((π h$_{11/2}$)(ν h$_{11/2}$)).
353.9+y# *3*	(9$^+$)		B	
386.65+y‡ *22*	(10$^-$)		B	
485.0+y# *3*	(10$^+$)		B	
605.63+y‡ *23*	(11$^-$)		B	
735.9+y# *3*	(11$^+$)		B	
871.75+y‡ *25*	(12$^-$)		B	
965.9+y# *3*	(12$^+$)		B	
1167.3+y‡ *3*	(13$^-$)		B	
1316.9+y# *3*	(13$^+$)		B	
1497.5+y‡ *3*	(14$^-$)		B	
1622.0+y# *4*	(14$^+$)		B	

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Adopted Levels, Gammas (continued)

^{134}Pm Levels (continued)

E(level)	J^{π}&	XREF	Comments
1838.9+y‡ *3*	(15−)	B	
2029.3+y# *4*	(15+)	B	
2192.2+y‡ *4*	(16−)	B	
2410.4+y# *4*	(16+)	B	
2550.9+y‡ *4*	(17−)	B	
2840.6+y# *4*	(17+)	B	
2927.6+y‡ *5*	(18−)	B	
3291.3+y# *4*	(18+)	B	
3299.3+y‡ *4*	(19−)	B	
3702.0+y# *5*	(19+)	B	
4224.6+y# *5*	(20+)	B	
5198.6+y# *6*	(22+)	B	
0.0+z		B	E(level): y >145+y; unobserved γ from (9+), 127.1+Z to (8+), 272.0+y level.
127.10+z@ *20*	(9+)	B	J^{π}: theoretical predictions, possible configuration=((π $h_{11/2}$)(ν $h_{9/2}$)).
359.3+z@ *3*	(11+)	B	
734.3+z@ *4*	(13+)	B	
1256.1+z@ *4*	(15+)	B	
1907.1+z@ *5*	(17+)	B	
2662.8+z@ *5*	(19+)	B	
3494.2+z@ *6*	(21+)	B	
4369.6+z@ *6*	(23+)	B	
5299.2+z@ *6*	(25+)	B	
6318.9+z@ *7*	(27+)	B	
7438.9+z@ *12*	(29+)	B	

† Relative position of isomers is unknown.
‡ Band(A): negative-parity band built on Configuration=((π $g_{7/2}$)(ν $h_{11/2}$)).
# Band(B): positive-parity band built on Configuration=((π N11/2)(ν $h_{11/2}$)).
@ Band(C): Doubly-decoupled band built on Configuration=((π $h_{11/2}$)(ν $h_{9/2}$)), transition Quadrupole Moment=3.9 *2* (2002La09).
& For collective states, assignments are based on band structure and decay pattern.

γ(^{134}Pm)

E_i(level)	J^{π}_i	E_{γ}	I_{γ}†	E_f	J^{π}_f	Mult.‡	α#	Comments
112.30		112.3 *2*	100	0.0	(2+)			
118.90	(1+)	118.9 *2*	100	0.0	(2+)	[M1]	0.961	α(K)= 0.815; α(L)= 0.1142; α(M)=0.02426; α(N+..)=0.00696
229.11		110.2 *2*	77 *16*	118.90	(1+)			
		116.8 *3*	23 *8*	112.30				
		229.1 *2*	100 *16*	0.0	(2+)			
280.03		50.8 *5*	6.7 *20*	229.11				
		161.2 *3*	100 *40*	118.90	(1+)			
		280.0 *2*	87 *14*	0.0	(2+)			
304.71		185.8 *2*	100	118.90	(1+)			
409.4		104.7 *3*	100 *21*	304.71				
		129.5 *5*	96 *21*	280.03				

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Adopted Levels, Gammas (continued)

$\gamma(^{134}Pm)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ†	E_f	J^π_f	Mult.‡	α#	Comments
418.93		300.0 *2*	100 *20*	118.90	(1+)			
		419.0 *3*	59 *17*	0.0	(2+)			
498.96		218.9 *2*	100 *10*	280.03				
		380.1 *2*	53 *7*	118.90	(1+)			
537.4		257.4 *3*	100	280.03				
887.4		768.5 *3*	100	118.90	(1+)			
106.19+y	(8−)	106.2 *2*	100	0.0+y	(7−)	(M1)	1.323	α(K)= 1.122; α(L)= 0.1577; α(M)= 0.0335; α(N+..)=0.00961
215.02+y	(9−)	108.8 *2*	100 *10*	106.19+y	(8−)	(M1)	1.235	α(K)= 1.048; α(L)= 0.1471; α(M)= 0.0313; α(N+..)=0.00897
		215.0 *3*	<18	0.0+y	(7−)			
272.00+y	(8+)	272.0 *2*	100	0.0+y	(7−)	(E1)	0.01823	α(K)=0.01558; α(L)=0.00209; α(M)=0.00044; α(N+..)=0.00012
353.9+y	(9+)	82.0 *2*	100	272.00+y	(8+)	(M1)	2.79	α(K)= 2.364; α(L)= 0.333; α(M)= 0.0707; α(N+..)=0.02005
386.65+y	(10−)	171.6 *2*	100 *10*	215.02+y	(9−)	(M1)	0.343	α(K)= 0.291; α(L)= 0.0405; α(M)=0.00859; α(N+..)=0.00245
		280.5 *2*	36 *4*	106.19+y	(8−)	(E2)	0.0674	α(K)= 0.0524; α(L)=0.01171; α(M)=0.00258; α(N+..)=0.00069
485.0+y	(10+)	131.1 *3*	100 *10*	353.9+y	(9+)	(M1)	0.729	α(K)= 0.619; α(L)= 0.0865; α(M)=0.01835; α(N+..)=0.00527
		212.9 *2*	10.3 *13*	272.00+y	(8+)	(E2)	0.1654	α(K)= 0.1224; α(L)= 0.0335; α(M)=0.00745; α(N+..)=0.00201
605.63+y	(11−)	219.0 *2*	86 *9*	386.65+y	(10−)	(M1)	0.1756	α(K)= 0.1494; α(L)=0.02063; α(M)=0.00438; α(N+..)=0.00123
		390.6 *2*	100 *10*	215.02+y	(9−)	(E2)	0.02462	α(K)=0.01991; α(L)=0.00370; α(M)=0.00080; α(N+..)=0.00022
735.9+y	(11+)	250.9 *2*	100 *10*	485.0+y	(10+)	(M1)	0.1215	α(K)= 0.1034; α(L)=0.01424; α(M)=0.00302; α(N+..)=0.00085
		382.0 *3*	20 *2*	353.9+y	(9+)	(E2)	0.0263	α(K)=0.02120; α(L)=0.00398; α(M)=0.00087; α(N+..)=0.00023
871.75+y	(12−)	266.1 *2*	64 *6*	605.63+y	(11−)	(M1)	0.1038	α(K)= 0.0883; α(L)=0.01215; α(M)=0.00258; α(N+..)=0.00072
		485.1 *2*	100 *10*	386.65+y	(10−)	(E2)	0.01337	α(K)=0.01100; α(L)=0.00186; α(M)=0.00040; α(N+..)=0.00011
965.9+y	(12+)	229.9 *2*	100 *10*	735.9+y	(11+)	(M1)	0.1539	α(K)= 0.1309; α(L)=0.01806; α(M)=0.00383; α(N+..)=0.00108
		480.9 *2*	66 *7*	485.0+y	(10+)	(E2)	0.01369	α(K)=0.01125; α(L)=0.00191; α(M)=0.00041; α(N+..)=0.00011
1167.3+y	(13−)	295.7 *2*	35 *4*	871.75+y	(12−)	(M1)	0.0783	α(K)= 0.0667; α(L)=0.00915; α(M)=0.00194; α(N+..)=0.00054
		561.7 *2*	100 *10*	605.63+y	(11−)	(E2)	0.00913	α(K)=0.00753; α(L)=0.00121
1316.9+y	(13+)	350.8 *2*	53 *5*	965.9+y	(12+)	(M1)	0.0500	α(K)= 0.0426; α(L)=0.00582; α(M)=0.00123; α(N+..)=0.00034
		581.1 *2*	100 *10*	735.9+y	(11+)	(E2)	0.00837	α(K)=0.00691; α(L)=0.00110
1497.5+y	(14−)	330.3 *3*	35 *4*	1167.3+y	(13−)	(M1)	0.0585	α(K)= 0.0499; α(L)=0.00682; α(M)=0.00145; α(N+..)=0.00040
		625.6 *2*	100 *10*	871.75+y	(12−)	(E2)	0.00696	α(K)=0.00577; α(L)=0.00089
1622.0+y	(14+)	305.1 *2*	27 *3*	1316.9+y	(13+)	(M1)	0.0721	α(K)= 0.0614; α(L)=0.00842; α(M)=0.00179; α(N+..)=0.00050
		656.2 *2*	100 *10*	965.9+y	(12+)	(E2)	0.00619	α(K)=0.00514; α(L)=0.00079
1838.9+y	(15−)	341.4 *2*	17 *3*	1497.5+y	(14−)	(M1)	0.0537	α(K)= 0.0457; α(L)=0.00625; α(M)=0.00133; α(N+..)=0.00037
		671.7 *2*	100 *10*	1167.3+y	(13−)	(E2)	0.00585	α(K)=0.00486; α(L)=0.00074
2029.3+y	(15+)	407.2 *2*	37 *4*	1622.0+y	(14+)	(M1)	0.0340	α(K)= 0.0290; α(L)=0.00394; α(M)=0.00083; α(N+..)=0.00023

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Adopted Levels, Gammas (continued)

$\gamma(^{134}Pm)$ (continued)

E_i(level)	J^{π}_i	E_γ	I_γ†	E_f	J^{π}_f	Mult.‡	α#	Comments
2029.3+y	(15+)	712.4 *2*	100 *10*	1316.9+y	(13+)	(E2)	0.00508	α(K)=0.00423; α(L)=0.00063
2192.2+y	(16−)	353.5 *3*	<19	1838.9+y	(15−)			
		694.6 *2*	100 *10*	1497.5+y	(14−)	(E2)	0.00539	α(K)=0.00449; α(L)=0.00068
2410.4+y	(16+)	381.1 *2*	34 *4*	2029.3+y	(15+)			α(K)= 0.0344; α(L)=0.00468; α(M)=0.00099; α(N+..)=0.00027
		788.5 *2*	100 *10*	1622.0+y	(14+)	(E2)	0.00401	α(K)=0.00336; α(L)=0.00049
2550.9+y	(17−)	712.0 *2*	100	1838.9+y	(15−)	(E2)	0.00509	α(K)=0.00424; α(L)=0.00064
2840.6+y	(17+)	430.1 *2*	36 *5*	2410.4+y	(16+)			
		811.1 *2*	100 *10*	2029.3+y	(15+)			
2927.6+y	(18−)	735.4 *3*	100	2192.2+y	(16−)	(E2)	0.00471	α(K)=0.00393; α(L)=0.00058
3291.3+y	(18+)	450.0 *3*	24 *4*	2840.6+y	(17+)			
		881.2 *2*	100 *10*	2410.4+y	(16+)	(E2)	0.00312	α(K)=0.00262; α(L)=0.00037
3299.3+y	(19−)	748.4 *2*	100	2550.9+y	(17−)	(E2)	0.00452	α(K)=0.00378; α(L)=0.00056
3702.0+y	(19+)	861.4 *3*	100	2840.6+y	(17+)			
4224.6+y	(20+)	933.3 *2*	100	3291.3+y	(18+)	(E2)	0.00275	α(K)=0.00232; α(L)=0.00033
5198.6+y	(22+)	974.0 *3*	100	4224.6+y	(20+)			
127.10+z	(9+)	127.1 *2*	100	0.0+z		D		
359.3+z	(11+)	232.2 *2*	100	127.10+z	(9+)	(E2)	0.1241	α(K)= 0.0935; α(L)=0.02386; α(M)=0.00529; α(N+..)=0.00143
734.3+z	(13+)	375.0 *2*	100	359.3+z	(11+)	(E2)	0.0277	α(K)=0.02234; α(L)=0.00423; α(M)=0.00092; α(N+..)=0.00025
1256.1+z	(15+)	521.8 *2*	100	734.3+z	(13+)	(E2)	0.01107	α(K)=0.00909; α(L)=0.00149
1907.1+z	(17+)	651.0 *2*	100	1256.1+z	(15+)	(E2)	0.00631	α(K)=0.00524; α(L)=0.00080
2662.8+z	(19+)	755.7 *2*	100	1907.1+z	(17+)	(E2)	0.00442	α(K)=0.00370; α(L)=0.00055
3494.2+z	(21+)	831.4 *2*	100	2662.8+z	(19+)	(E2)	0.00356	α(K)=0.00298; α(L)=0.00043
4369.6+z	(23+)	875.4 *2*	100	3494.2+z	(21+)	(E2)	0.00317	α(K)=0.00266; α(L)=0.00038
5299.2+z	(25+)	929.6 *2*	100	4369.6+z	(23+)	(E2)	0.00278	α(K)=0.00234; α(L)=0.00033
6318.9+z	(27+)	1019.7 *3*	100	5299.2+z	(25+)	(E2)	0.00228	α(K)=0.00192; α(L)=0.00027
7438.9+z	(29+)	1120 *1*	100	6318.9+z	(27+)			

† Relative photon branching from each level.

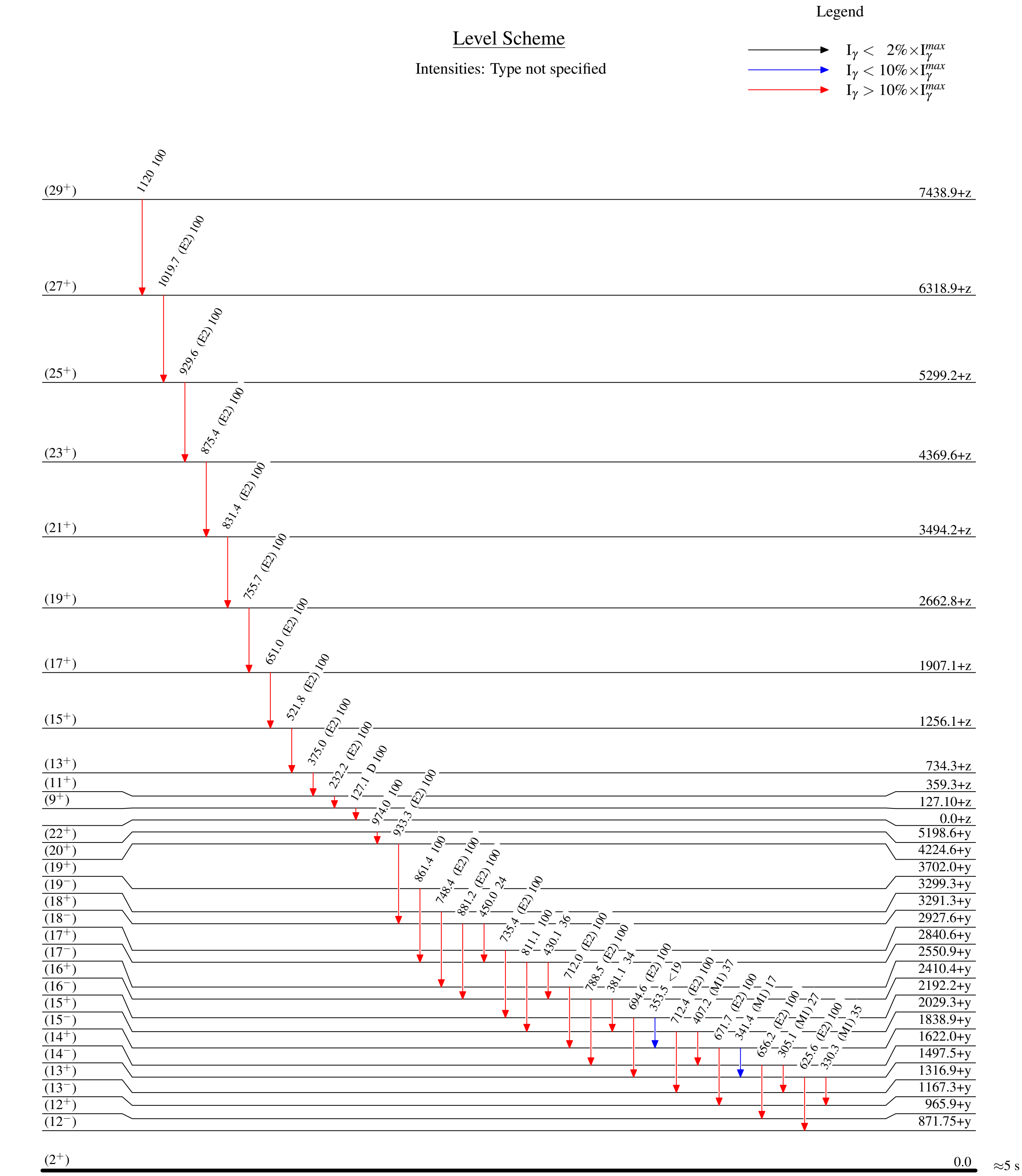
‡ From (HI,xnγ), unless stated otherwise.

\# 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

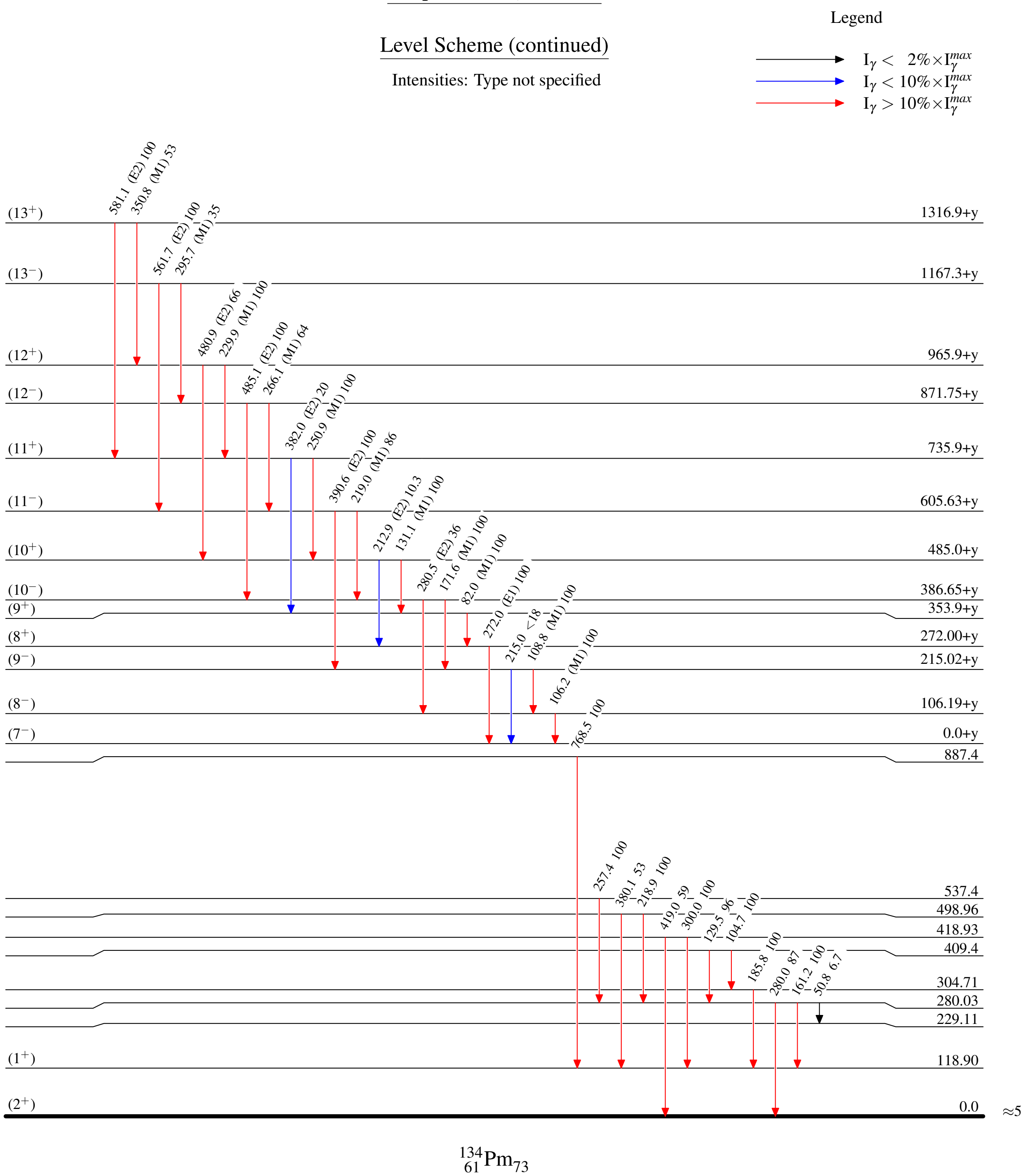


$^{134}_{61}Pm_{73}$

Adopted Levels, Gammas

Level Scheme (continued)

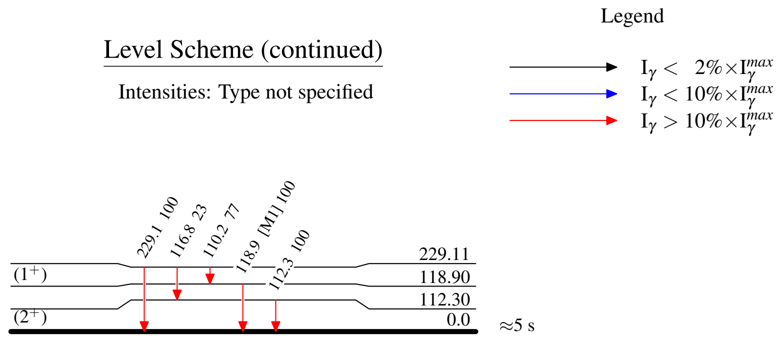
Intensities: Type not specified



Adopted Levels, Gammas

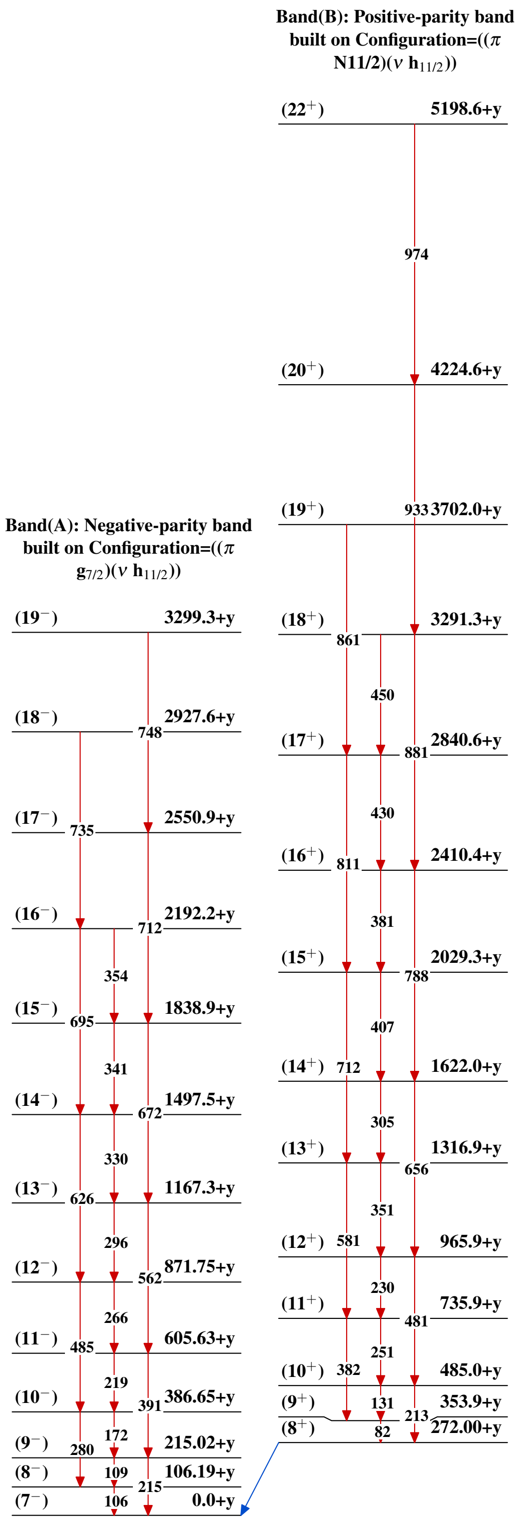
Level Scheme (continued)

Intensities: Type not specified



$^{134}_{61}Pm_{73}$

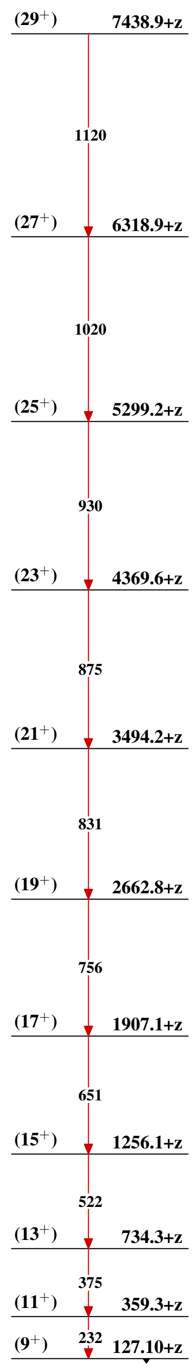
Adopted Levels, Gammas



$^{134}_{61}Pm_{73}$

Adopted Levels, Gammas (continued)

Band(C): Doubly-decoupled band built on Configuration=((π $h_{11/2}$)(ν $h_{9/2}$)), transition Quadrupole Moment=3.9 *2* (2002La09)



$^{134}_{61}Pm_{73}$