^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Janos Timar and Zoltan Elekes, Balraj Singh	NDS 121, 143 (2014)	31-May-2014

Includes ^{122}Te(^{11}B,4nγ) and ^{118}Sn(^{14}N,3nγ) from 1973Le09; and ^{121}Sb(^{12}C,4nγ), ^{118}Sn(^{14}N,3nγ), ^{120}Sn(^{14}N,5nγ), ^{115}In(^{18}O,4nγ) from 1969Al05.

1995Ku29: ^{119}Sn(^{14}N,4nγ), E=59, 62, 65 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma\gamma(\theta)$ using an array of six Ge detectors.

2008Sa36: ^{120}Sn(^{14}N,5nγ), E=77 MeV. Measured lifetimes by Doppler-shift attenuation method.

1975Wa07: ^{119}Sn(^{14}N,4nγ) E=67, 75 MeV; Ge γ, $\gamma\gamma$-coin, $\gamma(\theta)$.

1975Bu08: ^{119}Sn(^{14}N,4nγ) E=67 MeV; Doppler-shift recoil-distance method.

1973Le09: ^{122}Te(^{11}B,4nγ) E=50, 56.5 MeV, ^{118}Sn(^{14}N,3nγ) E=53, 58, 62, 67, 76 MeV; excitation function, Ge γ, $\gamma\gamma$-coin, $\gamma(\theta)$.

1969Al05: ^{121}Sb(^{12}C,4n), $^{118,\ 119,\ 120}$Sn,xn), ^{115}In(^{18}O,4n), E=50-110 MeV; excitation function, Ge, scin, Si ce, HI-γ(t), HI-Ce(t).

^{129}La Levels

Level scheme is mainly from 1995Ku29. J$^{\pi}$ assignment on the basis of γ multipolarities deduced from angular correlation or from A_2 and A_4 values.

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
0.0[h]	3/2$^+$		
68.18[i] *20*	5/2$^+$		
172.4[e] *3*	11/2$^-$	0.56 s *5*	T$_{1/2}$: from decay curves for 68.9γ and 104.8γ (1969Al05).
239.8[n] *3*			
248.57[h] *19*	7/2$^+$		
440.25[o] *20*	7/2$^+$		
442.2[e] *3*	15/2$^-$	90[@] ps *4*	
446.49[i] *23*	9/2$^+$		
645.9[n] *3*	(9/2$^+$)		
696.73[h] *24*	11/2$^+$		
916.9[e] *3*	19/2$^-$	6.0[@] ps *9*	
929.1[m] *3*			
992.52[o] *23*	11/2$^+$		
1021.95[i] *24*	13/2$^+$		
1120.3[d] *3*	(13/2$^-$)		
1120.5? *3*			The existence of this level is not discussed in 1995Ku29. Evaluators find that the 1098.7 keV γ may feed the 1120.3 keV (13/2$^-$) level, in which case this level may not exist.
1234.4[n] *3*	13/2$^+$		
1275.2 *3*			
1305.1[b] *3*	17/2$^-$		
1315.9[h] *3*	15/2$^+$		
1328.9 *4*			
1524.5[m] *3*			
1558.3[e] *3*	23/2$^-$	≥1.2 ps	
1586.8[d] *3*	17/2$^-$		
1651.2 *4*			
1654.3 *3*	13/2$^+$		
1725.1 *3*	(15/2$^+$)		
1753.3? *4*			The existence of this level is not discussed in 1995Ku29. Evaluators find that the 1311.1 keV γ may depopulate the 1753.6 keV *17*/2$^+$ level, in which case this level may not

Continued on next page (footnotes at end of table)

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

^{129}La Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
			exist.
1753.6[i] *3*	17/2+		
1803.1 *3*			
1851.4[c] *3*	19/2−		
1949.8[b] *3*	21/2−		
1951.8 *4*			
1956.7 *4*			
1972.4 *3*			
1985.3[f] *3*	19/2+		
2003.9 *4*			
2070.1[h] *4*	19/2+		
2118.5 *4*			
2170.0 *4*	19/2		
2206.7 *4*			
2219.1 *3*	15/2+		
2221.7[d] *3*	21/2−		
2242.9[m] *3*	17/2+		
2278.2 *4*			
2291.2 *3*			
2298.2 *3*			
2343.5[e] *3*	27/2−	0.82 ps *20*	
2352.1[a] *4*	(19/2+)		
2431.9[f] *3*	23/2+		
2453.1 *3*			
2454.0 *4*			
2462.9 *5*			
2475.0[c] *3*	23/2−		
2478.3[g] *3*	21/2+		
2490.3 *4*			
2520.6 *4*			
2568.6[&] *4*	(21/2+)		
2599.0 *4*			
2681.5 *4*			
2705.4 *4*			
2729.8 *4*			
2767.8 *4*			
2784.2[l] *3*			
2789.9 *3*	(23/2+)		
2803.2 *3*			
2822.9[a] *4*	(23/2+)		In level-scheme table of 1995Ku29, two separate levels are shown, one at 2822.9 decaying through 254.3γ and 1264.6γ; the other at 2822.6 decaying through 1264.4γ. But in the figure only one level is shown by 1995Ku29.
2841.3[h] *4*	23/2+		
2864.4 *4*			
2910.1[g] *3*	25/2+		
2911.3 *3*			
2943.3 *5*			
2955.4[d] *4*	(25/2−)		
2956.0? *4*			Evaluators find that the 612.5 keV γ may depopulate the 2955.4 keV (25/2−) level, in which case the level may not exist.
3018.0[f] *4*	27/2+		
3044.1 *4*			
3096.3[&] *4*	(25/2+)		

Continued on next page (footnotes at end of table)

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

^{129}La Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
3124.6 *4*			
3215.8[c] *4*	27/2$^-$		
3254.0[e] *4*	31/2$^-$	0.40 ps *8*	
3287.0 *4*			
3310.1 *4*			
3376.2 *4*			
3383.1 *4*			
3411.6[l] *4*			
3420.9[a] *4*	(27/2$^+$)		
3474.9 *4*			
3475.1 *5*			
3477.0[g] *4*	29/2$^+$		
3482.6 *4*			
3523.4 *4*			
3531.4 *4*			
3636.9 *4*			
3695.2 *4*			
3697.4 *5*			
3712.4 *4*			
3732.1[f] *4*	31/2$^+$		
3760.4[d] *5*	(29/2$^-$)		
3783.8[&] *4*	(29/2$^+$)		
3858.1 *4*			
3952.3 *4*			
3998.5 *5*			
4000.4 *4*			
4000.9 *5*			
4042.8 *4*			
4043.5[c] *5*	(31/2$^-$)		
4176.9[a] *4*	(31/2$^+$)		
4199.1[g] *4*	33/2$^+$		
4267.2[e] *5*	35/2$^-$	0.50 ps *12*	
4297.3 *5*			
4362.0?	(31/2$^+$)		No decaying gammas shown by 1995Ku29. See comment for 5200.9 level.
4555.4[f] *5*	35/2$^+$		
4602.6[&] *5*	(33/2$^+$)		
4761.8?	(33/2$^+$)		No decaying gammas shown by 1995Ku29. See comment for 5200.9 level.
4907.9[c] *6*	(35/2$^-$)		
5082.2[g] *5*	37/2$^+$		
5200.80? *21*	(35/2$^+$)		This level is shown in the level-scheme table only by 1995Ku29 decaying through 439.4γ (to a 4761.8, (33/2$^+$) level) and 838.6γ (to a 4362.0, (31/2$^+$) level). The decay of the final levels at 4761.8 and 4362.0 is shown neither in the figure nor in the table. This sequence of three levels and connecting γ rays matches exactly with the level sequence of x+2356.6, x+1917.4, x+1517.7 and the γ rays between them. Thus the level sequence of 5200.8, 4761.8, 4362.0 very probably does not exist.
5361.1[e] *6*	(39/2$^-$)	0.37 ps *10*	
5477.1[f] *6*	39/2$^+$		
0+x[k]	(17/2$^+$)		
55.9+x[j] *3*	(19/2$^+$)		
166.6+x[k] *4*	(21/2$^+$)		
331.0+x[j] *5*	(23/2$^+$)		
552.4+x[k] *5*	(25/2$^+$)		
829.3+x[j] *5*	(27/2$^+$)		

Continued on next page (footnotes at end of table)

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

^{129}La Levels (continued)

E(level)[†]	J$^{\pi}$[‡]
1152.2+x[k] 5	(29/2$^+$)
1517.7+x[j] 5	(31/2$^+$)
1917.4+x[k] 6	(33/2$^+$)
2356.6+x[j] 6	(35/2$^+$)
2820.4+x[k] 7	(37/2$^+$)

[†] From least-squares fit to Eγ data, assuming Δ(Eγ)= 0.3 keV when not stated.
[‡] As assigned in 1995Ku29 based on $\gamma(\theta)$ and $\gamma\gamma(\theta)$ data combined with band structures. All assignments are given in parentheses in Adopted Levels since strong supporting arguments for the lower levels (or bandheads are lacking).
[#] From DSAM in 2008Sa36, unless otherwise noted.
[@] From recoil-distance method (1975Bu08).
[&] Band(A): π1/2[550]$\otimes\nu$7/2[523]$\otimes\nu$5/2[402],α=+1/2. Three-quasiparticle band with one signature of ν7/2[523].
[a] Band(B): π1/2[550]$\otimes\nu$7/2[523]$\otimes\nu$5/2[402],α=−1/2.
[b] Band(C): π1/2[550],α=+1/2.
[c] Band(D): π3/2[541],α=−1/2.
[d] Band(E): π3/2[541],α=+1/2.
[e] Band(F): π1/2[550],α=−1/2.
[f] Band(G): π3/2[422]$\otimes\pi h^2_{11/2}$,α=−1/2.
[g] Band(H): π3/2[422]$\otimes\pi h^2_{11/2}$,α=+1/2.
[h] Band(I): π(3/2[422]+1/2[420]),α=−1/2. Strongly coupled one-quasiproton.
[i] Band(J): π(3/2[422]+1/2[420]),α=+1/2.
[j] Band(K): π1/2[550]$\otimes\nu$7/2[523]$\otimes\nu$5/2[402],α=−1/2. Three-quasiparticle band with the other signature of ν7/2[523].
[k] Band(L): π1/2[550]$\otimes\nu$7/2[523]$\otimes\nu$5/2[402],α=+1/2.
[l] Band(M): γ cascade #1.
[m] Band(N): γ cascade #2.
[n] Band(O): γ cascade #3.
[o] Band(P): γ cascade #4.

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

$\gamma(^{129}La)$

A_2 and A_4 values from $\gamma(\theta)$ and DCO values from $\gamma\gamma(\theta)$ data are from 1995Ku29, unless otherwise specified.

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	δ[†]	α[‡]	Comments
68.18	$5/2^+$	68.3 *3*		0.0	$3/2^+$	M1			α(L)exp=0.44 *20* (1969Al05)
172.4	$11/2^-$	104.0 *3*		68.18	$5/2^+$	E3		20.8	Mult.: from Adopted Gammas. α(L+M)exp=25 *15*; K/L=0.51 *11* (1969Al05).
239.8		171.7 *3*		68.18	$5/2^+$				
248.57	$7/2^+$	180.5 *3*	100 *11*	68.18	$5/2^+$				
		248.5 *3*	17 *4*	0.0	$3/2^+$				
440.25	$7/2^+$	191.7 *2*	4 *1*	248.57	$7/2^+$				
		372.2 *3*	100 *8*	68.18	$5/2^+$				
		440.2 *3*	50 *9*	0.0	$3/2^+$				
442.2	$15/2^-$	269.7 *3*		172.4	$11/2^-$	E2		0.0660	α(K)=0.0528 *8*; α(L)=0.01044 *16*; α(M)=0.00223 *4* α(N)=0.000481 *7*; α(O)=7.32×10^{-5} *11*; α(P)=3.47×10^{-6} *5* A_2=+0.292 *1*; A_4=−0.074 *1* A_2=+0.35 *3* (1975Wa07); A_2=+0.24 *3* (1973Le09)
446.49	$9/2^+$	198.0 *3*	69 *13*	248.57	$7/2^+$				
		378.3 *3*	100	68.18	$5/2^+$				
645.9	$(9/2^+)$	199.5 *3*	21 *7*	446.49	$9/2^+$	(M1+E2)	−1.6 *+5−8*	0.173 *5*	α(K)=0.1368 *21*; α(L)=0.029 *3*; α(M)=0.0062 *6* α(N)=0.00133 *13*; α(O)=0.000201 *17*; α(P)=9.1×10^{-6} *4* DCO=0.69 *6*
		397.3 *3*	73 *13*	248.57	$7/2^+$				
		406.2 *3*	100 *9*	239.8					
696.73	$11/2^+$	250.2 *3*	32 *6*	446.49	$9/2^+$				
		448.2 *3*	100 *9*	248.57	$7/2^+$				
916.9	$19/2^-$	474.8 *3*		442.2	$15/2^-$	E2			A_2=+0.325 *1*; A_4=−0.092 *1*; DCO=1.129 *5* A_2=+0.32 *3* (1975Wa07); A_2=+0.29 *4* (1973Le09) δ(O/Q)=− 0.14 *4*.
929.1		232.4 *3*	30 *7*	696.73	$11/2^+$				
		482.7 *3*	100	446.49	$9/2^+$				
992.52	$11/2^+$	546.1 *3*	100 *9*	446.49	$9/2^+$	(M1+E2)	+0.11 *+10−7*		DCO=0.74 *6* δ: or δ(Q/D)=− 8 *+8−3*.
		552.4 *3*	71 *14*	440.25	$7/2^+$				
		743.9 *3*	27 *10*	248.57	$7/2^+$				
1021.95	$13/2^+$	325.3 *3*	18 *4*	696.73	$11/2^+$				
		575.4 *3*	100 *10*	446.49	$9/2^+$	Q			DCO=1.06 *3* δ(O/Q)=− 0.14 *7*.
1120.3	$(13/2^-)$	678.2 *3*	100 *10*	442.2	$15/2^-$				
		947.8 *2*	30 *8*	172.4	$11/2^-$				
1120.5?		678.4[#] *2*		442.2	$15/2^-$				
1234.4	$13/2^+$	537.7 *3*	9 *4*	696.73	$11/2^+$				
		588.6 *3*	100 *10*	645.9	$(9/2^+)$				

$^{129}_{57}La_{72}$-5

$^{119}Sn(^{14}N,4n\gamma)$ 1995Ku29,2008Sa36 (continued)

$\gamma(^{129}La)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	δ[†]	Comments
1275.2		833.0 *2*		442.2	$15/2^-$			
1305.1	$17/2^-$	388.4 *2*	22 *5*	916.9	$19/2^-$	D		A_2=+0.011 *5*; A_4=+0.022 *6*; DCO=0.62 *5* δ(Q/D)=+ 0.1 *+2−1* or + 8 *+7−4*.
		862.9 *3*	100 *10*	442.2	$15/2^-$	(M1+E2)	−0.91 *+8−9*	A_2=−0.97 *1*; A_4=+0.12 *1*; DCO=0.46 *2*
1315.9	$15/2^+$	294.1 *3*	6 *2*	1021.95	$13/2^+$			
		619.0 *3*	100 *9*	696.73	$11/2^+$	Q		DCO=1.03 *3* δ(O/Q)= 0.02 *+3−2*.
1328.9		886.7 *3*		442.2	$15/2^-$			
1524.5		502.5 *3*	29 *9*	1021.95	$13/2^+$			
		595.4 *3*	100 *11*	929.1				
1558.3	$23/2^-$	641.4 *3*		916.9	$19/2^-$	Q		A_2=+0.310 *2*; A_4=0.099 *2*; DCO=1.044 *7* A_2=+0.35 *3* (1975Wa07); A_2=+0.22 *6* (1973Le09) δ(O/Q)=− 0.05 *+4−4*.
1586.8	$17/2^-$	466.5 *3*	12 *3*	1120.3	$(13/2^-)$			
		670.1 *3*	100 *9*	916.9	$19/2^-$	(M1+E2)	+0.5 *+2−1*	A_2=−0.476 *5*; A_4=+0.046 *6*; DCO=0.55 *3* δ: or + 2.1 *+4−5*.
		1144.5 *3*	14 *3*	442.2	$15/2^-$			
1651.2		1209.0 *3*		442.2	$15/2^-$			
1654.3	$13/2^+$	632.4 *2*	55 *13*	1021.95	$13/2^+$			
		661.7 *3*	100 *11*	992.52	$11/2^+$	(M1+E2)	+0.3 *2*	DCO=0.8 *1*
1725.1	$(15/2^+)$	703.1 *2*	10 *3*	1021.95	$13/2^+$			
		732.7 *3*	23 *5*	992.52	$11/2^+$			
		1282.8 *3*	100 *10*	442.2	$15/2^-$	D+Q	+0.3 *2*	DCO=1.13 *6*
1753.3?		1311.1 *3*		442.2	$15/2^-$			
1753.6	$17/2^+$	731.6 *3*		1021.95	$13/2^+$	Q		DCO=0.98 *7* δ(O/Q)=− 0.1 *2*.
1803.1		810.7 *3*		992.52	$11/2^+$			
1851.4	$19/2^-$	264.8 *3*	22 *5*	1586.8	$17/2^-$			
		546.4 *3*	78 *19*	1305.1	$17/2^-$			
		934.5 *3*	79 *18*	916.9	$19/2^-$	(D)		DCO=0.6 *2* δ(Q/D)=− 1 *+1−2*.
		1409.2 *3*	100 *12*	442.2	$15/2^-$	Q		A_2=+0.28 *3*; A_4=−0.09 *3*; DCO=1.1 *2* δ(O/Q)=− 0.2 *+3−2*.
1949.8	$21/2^-$	391.5 *3*	21 *8*	1558.3	$23/2^-$			
		644.7 *3*	41 *13*	1305.1	$17/2^-$			
		1033.0 *2*	100 *12*	916.9	$19/2^-$	(M1+E2)	−0.7 *+2−8*	DCO=0.47 *2*
1951.8		393.5 *3*		1558.3	$23/2^-$			
1956.7		722.3 *3*		1234.4	$13/2^+$			
1972.4		667.3 *3*		1305.1	$17/2^-$			
		1055.5 *3*		916.9	$19/2^-$			
		1530.2 *3*		442.2	$15/2^-$			
1985.3	$19/2^+$	669.6 *3*	22 *5*	1315.9	$15/2^+$			
		1068.3 *3*	100 *9*	916.9	$19/2^-$	(D)		A_2=+0.221 *9*; A_4=+0.018 *9*; DCO=0.94 *3* δ(Q/D)= 0.0 *2*.

$^{129}_{57}La_{72}$-6

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

γ(^{129}La) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	δ[†]	Comments
2003.9		1561.7 *3*		442.2	15/2$^-$			
2070.1	19/2$^+$	754.0 *3*		1315.9	15/2$^+$			
2118.5		1201.6 *3*		916.9	19/2$^-$			
2170.0	19/2	864.9 *3*		1305.1	17/2$^-$	D		A_2=−0.28 *1*; A_4=+0.08 *2*
2206.7		1289.8 *3*		916.9	19/2$^-$			
2219.1	15/2$^+$	903.2 *3*		1315.9	15/2$^+$			
		1098.7 *2*		1120.5?				
		1197.0 *3*		1021.95	13/2$^+$	M1+E2	+0.21 *+7−4*	DCO=0.75 *5* or δ(Q/D)=+ 4.4 *+8−11*.
		1522.4 *2*		696.73	11/2$^+$			
		1776.7 *3*		442.2	15/2$^-$	(D)		DCO=1.14 *7* δ(Q/D)=− 0.2 *2*.
2221.7	21/2$^-$	370.3 *3*	21 *5*	1851.4	19/2$^-$			
		634.8 *3*	100 *10*	1586.8	17/2$^-$			
		663.4 *3*	58 *12*	1558.3	23/2$^-$	M1+E2	+0.8 *+12−4*	DCO=0.62 *6* or δ(Q/D)=+ 0.9 *+11−5*.
		1304.8 *5*		916.9	19/2$^-$			
2242.9	17/2$^+$	439.8 *3*		1803.1				
		517.7 *3*		1725.1	(15/2$^+$)			
		718.4 *3*		1524.5				
		926.9 *3*		1315.9	15/2$^+$	(M1+E2)	−0.3 *+2−3*	DCO=0.4 *1* or δ(Q/D)=− 4 *+2−7*.
		967.6 *2*		1275.2				
		1008.5 *3*		1234.4	13/2$^+$			
		1221.0 *3*		1021.95	13/2$^+$	Q		DCO=1.1 *2* δ(O/Q)=− 0.3 *+2−3*.
		1326.0 *3*		916.9	19/2$^-$			
		1800.5 *3*		442.2	15/2$^-$			
2278.2		1361.3 *3*		916.9	19/2$^-$			
2291.2		1374.3 *2*		916.9	19/2$^-$			
2298.2		544.4 *3*		1753.6	17/2$^+$			
		1856.2 *3*		442.2	15/2$^-$			
2343.5	27/2$^-$	785.3 *3*		1558.3	23/2$^-$	E2		A_2=+0.253 *3*; A_4=−0.098 *3*; DCO=0.99 *2* A_2=+0.31 *4* (1975Wa07); A_2=+0.21 *1* (1973Le09) δ(O/Q)=− 0.05 *+7−3*.
2352.1	(19/2$^+$)	1435.2 *3*		916.9	19/2$^-$	(D)		A_2=+0.38 *5*; A_4=+0.07 *5*
2431.9	23/2$^+$	446.7 *3*	46 *8*	1985.3	19/2$^+$			
		873.7 *3*	100 *9*	1558.3	23/2$^-$	(D)		DCO=0.96 *3* δ(Q/D)= 0.0 *2*.
2453.1		1536.2 *2*		916.9	19/2$^-$			
2454.0		895.7 *3*		1558.3	23/2$^-$			
2462.9		1546.0 *4*		916.9	19/2$^-$			
2475.0	23/2$^-$	525.2 *2*	54 *12*	1949.8	21/2$^-$			

$^{129}_{57}La_{72}$-7

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

γ(^{129}La) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	Comments
2475.0	23/2$^-$	623.7 *3*	100 *10*	1851.4	19/2$^-$		
		916.9 *2*	29 *8*	1558.3	23/2$^-$		
		1557.8 *3*	81 *18*	916.9	19/2$^-$	Q	A_2=+0.37 *3*; A_4=−0.08 *4*; DCO=1.0 *1* δ(O/Q)=− 0.0 *2*.
2478.3	21/2$^+$	493.1 *3*	28 *6*	1985.3	19/2$^+$		
		724.8 *3*		1753.6	17/2$^+$		
		919.7 *3*	100 *9*	1558.3	23/2$^-$		
2490.3		1573.4 *3*		916.9	19/2$^-$		
2520.6		962.3 *2*		1558.3	23/2$^-$		
2568.6	(21/2$^+$)	216.6 *3*		2352.1	(19/2$^+$)		
		398.7 *3*		2170.0	19/2		
2599.0		845.4 *2*		1753.6	17/2$^+$		
2681.5		927.9 *2*		1753.6	17/2$^+$		
2705.4		1147.1 *2*		1558.3	23/2$^-$		
2729.8		1171.5 *2*		1558.3	23/2$^-$		
2767.8		1014.2 *3*		1753.6	17/2$^+$		
2784.2		352.5 *3*	93 *20*	2431.9	23/2$^+$		
		1225.9 *3*	100 *12*	1558.3	23/2$^-$		
2789.9	(23/2$^+$)	840.2 *3*	97 *25*	1949.8	21/2$^-$		
		1231.4 *3*	100 *13*	1558.3	23/2$^-$		
2803.2		1886.3 *2*		916.9	19/2$^-$		
2822.9	(23/2$^+$)	254.3 *3*	100 *10*	2568.6	(21/2$^+$)		
		1264.6 *3*	65 *15*	1558.3	23/2$^-$		
2841.3	23/2$^+$	771.0 *3*		2070.1	19/2$^+$		
2864.4		1306.1 *3*		1558.3	23/2$^-$		
2910.1	25/2$^+$	431.7 *3*	26 *5*	2478.3	21/2$^+$		
		478.3 *3*	100 *9*	2431.9	23/2$^+$		
		566.5 *2*		2343.5	27/2$^-$		
2911.3		1994.4 *2*		916.9	19/2$^-$		
2943.3		873.2 *3*		2070.1	19/2$^+$		
2955.4	(25/2$^-$)	733.7 *3*		2221.7	21/2$^-$		
2956.0?		612.5 *2*		2343.5	27/2$^-$		E_γ: from level scheme figure of 1995Ku29. E= 611.9 *2* in table.
3018.0	27/2$^+$	586.2 *3*	100 *9*	2431.9	23/2$^+$	Q	A_2=+0.333 *6*; A_4=−0.105 *8*
		674.5 *3*	25 *5*	2343.5	27/2$^-$	(D)	DCO=0.87 *8* δ(Q/D)=− 0.5 *+5−4*.
3044.1		1485.8 *3*		1558.3	23/2$^-$		
3096.3	(25/2$^+$)	273.5 *3*		2822.9	(23/2$^+$)		
		306.2 *3*		2789.9	(23/2$^+$)		
3124.6		2207.7 *3*		916.9	19/2$^-$		
3215.8	27/2$^-$	740.9 *3*	100 *11*	2475.0	23/2$^-$		
		1657.3 *3*	47 *12*	1558.3	23/2$^-$	Q	DCO=1.05 *3* δ(O/Q)=− 0.05 *+7−10*.
3254.0	31/2$^-$	910.5 *3*		2343.5	27/2$^-$		A_2=+0.26 *15* (1975Wa07)

$^{129}_{57}La_{72}$-8

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

γ(^{129}La) (continued)

E_i(level)	J_i^π	E_γ †	E_f	J_f^π	Comments
3287.0		2370.1 *3*	916.9	19/2$^-$	
3310.1		966.6 *3*	2343.5	27/2$^-$	
3376.2		1032.7 *2*	2343.5	27/2$^-$	
3383.1		1039.6 *2*	2343.5	27/2$^-$	
3411.6		501.5 *2*	2910.1	25/2$^+$	
		627.5 *3*	2784.2		
3420.9	(27/2$^+$)	325.1 *3*	3096.3	(25/2$^+$)	
3474.9		1131.4 *2*	2343.5	27/2$^-$	
3475.1		633.8 *3*	2841.3	23/2$^+$	
3477.0	29/2$^+$	459.0 *3*	3018.0	27/2$^+$	
		566.9 *3*	2910.1	25/2$^+$	
3482.6		1139.1 *2*	2343.5	27/2$^-$	
3523.4		1179.9 *2*	2343.5	27/2$^-$	
3531.4		2614.5 *3*	916.9	19/2$^-$	
3636.9		1293.4 *3*	2343.5	27/2$^-$	
3695.2		853.8 *2*	2841.3	23/2$^+$	
		1351.9 *3*	2343.5	27/2$^-$	
3697.4		856.1 *3*	2841.3	23/2$^+$	
3712.4		1368.9 *3*	2343.5	27/2$^-$	
3732.1	31/2$^+$	714.0 *3*	3018.0	27/2$^+$	
3760.4	(29/2$^-$)	805.0 *3*	2955.4	(25/2$^-$)	
3783.8	(29/2$^+$)	362.5 *3*	3420.9	(27/2$^+$)	
		687.3 *2*	3096.3	(25/2$^+$)	
3858.1		1514.6 *3*	2343.5	27/2$^-$	
3952.3		1608.8 *3*	2343.5	27/2$^-$	
3998.5		744.5 *3*	3254.0	31/2$^-$	
4000.4		1656.9 *3*	2343.5	27/2$^-$	
4000.9		746.9 *3*	3254.0	31/2$^-$	
4042.8		565.8 *2*	3477.0	29/2$^+$	
4043.5	(31/2$^-$)	827.7 *3*	3215.8	27/2$^-$	
4176.9	(31/2$^+$)	392.5 *3*	3783.8	(29/2$^+$)	
		756.4 *2*	3420.9	(27/2$^+$)	
4199.1	33/2$^+$	467.0 *3*	3732.1	31/2$^+$	
		722.1 *3*	3477.0	29/2$^+$	
4267.2	35/2$^-$	1013.2 *3*	3254.0	31/2$^-$	A_2=+0.02 *30* (1975Wa07)
4297.3		1043.3 *3*	3254.0	31/2$^-$	
4555.4	35/2$^+$	823.3 *3*	3732.1	31/2$^+$	
4602.6	(33/2$^+$)	425.7 *2*	4176.9	(31/2$^+$)	
		818.7 *3*	3783.8	(29/2$^+$)	
4907.9	(35/2$^-$)	864.4 *3*	4043.5	(31/2$^-$)	
5082.2	37/2$^+$	883.1 *3*	4199.1	33/2$^+$	
5200.80?	(35/2$^+$)	439.4 *3*	4761.8?	(33/2$^+$)	
		838.6 *3*	4362.0?	(31/2$^+$)	

$^{129}_{57}La_{72}$-9

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36 (continued)

$\gamma(^{129}La)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
5361.1	$(39/2^-)$	1093.9 *3*		4267.2	$35/2^-$	1152.2+x	$(29/2^+)$	323.0 *3*	100 *7*	829.3+x	$(27/2^+)$
5477.1	$39/2^+$	921.7 *3*		4555.4	$35/2^+$			599.8 *3*	29 *5*	552.4+x	$(25/2^+)$
55.9+x	$(19/2^+)$	55.9 *3*		0+x	$(17/2^+)$	1517.7+x	$(31/2^+)$	365.5 *3*	100 *7*	1152.2+x	$(29/2^+)$
166.6+x	$(21/2^+)$	110.7 *3*		55.9+x	$(19/2^+)$			688.4 *3*	49 *9*	829.3+x	$(27/2^+)$
331.0+x	$(23/2^+)$	164.5 *3*		166.6+x	$(21/2^+)$	1917.4+x	$(33/2^+)$	399.9 *3*	100 *8*	1517.7+x	$(31/2^+)$
552.4+x	$(25/2^+)$	221.5 *3*	100 *10*	331.0+x	$(23/2^+)$			765.2 *3*	53 *10*	1152.2+x	$(29/2^+)$
		385.7 *3*	4 *1*	166.6+x	$(21/2^+)$	2356.6+x	$(35/2^+)$	439.4 *3*		1917.4+x	$(33/2^+)$
829.3+x	$(27/2^+)$	277.0 *3*	100 *8*	552.4+x	$(25/2^+)$			838.6 *3*		1517.7+x	$(31/2^+)$
		498.3 *3*	13 *2*	331.0+x	$(23/2^+)$	2820.4+x	$(37/2^+)$	463.8 *3*		2356.6+x	$(35/2^+)$

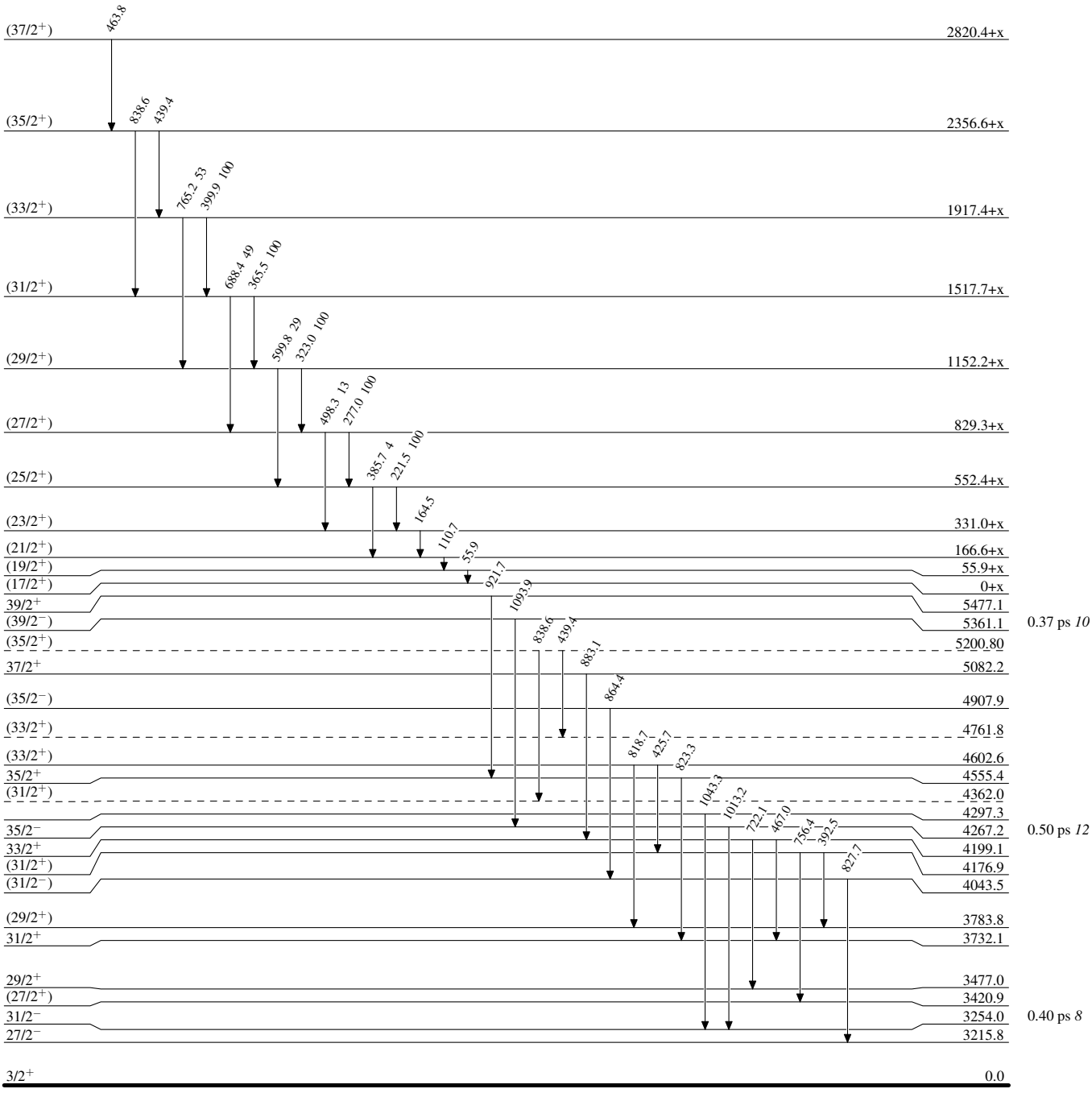
† From 1995Ku29.
‡ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
# Placement of transition in the level scheme is uncertain.

$^{129}_{57}La_{72}$-10

$^{119}Sn(^{14}N,4n\gamma)$ **1995Ku29,2008Sa36**

Level Scheme

Intensities: Relative photon branching from each level

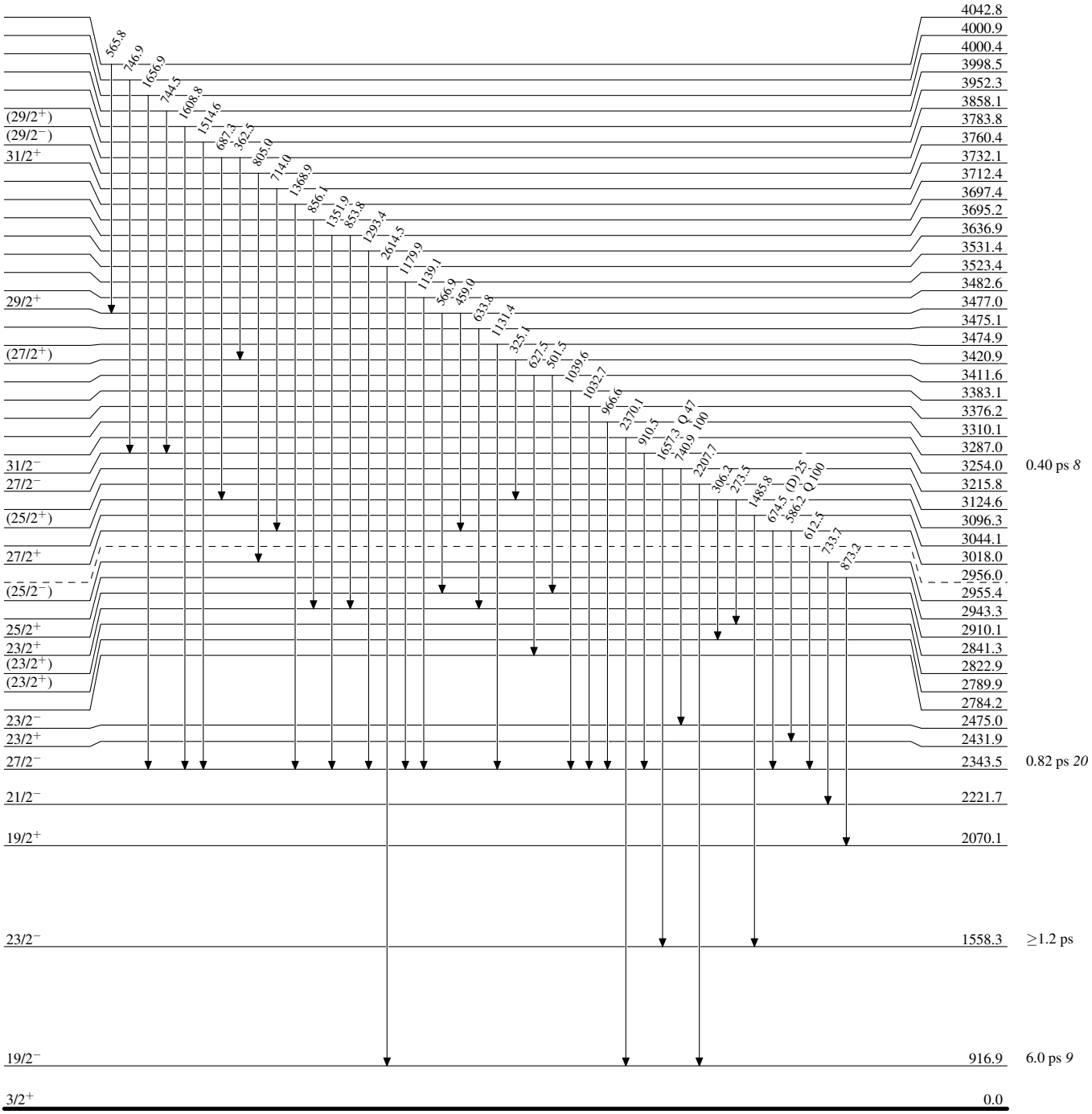


$^{129}_{57}La_{72}$

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36

Level Scheme (continued)

Intensities: Relative photon branching from each level

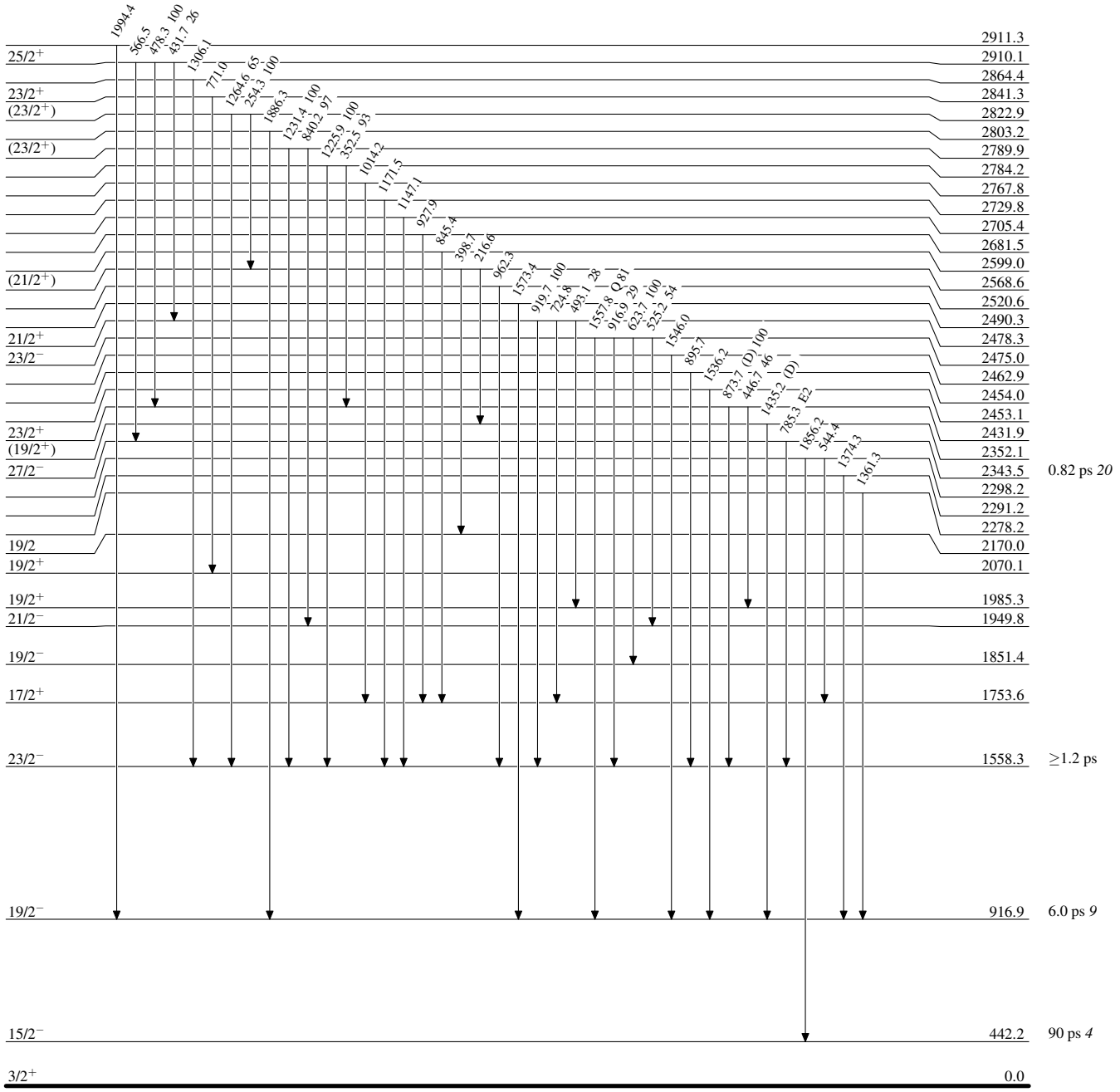


$^{129}_{57}La_{72}$

$^{119}Sn(^{14}N,4n\gamma)$ 1995Ku29,2008Sa36

Level Scheme (continued)

Intensities: Relative photon branching from each level

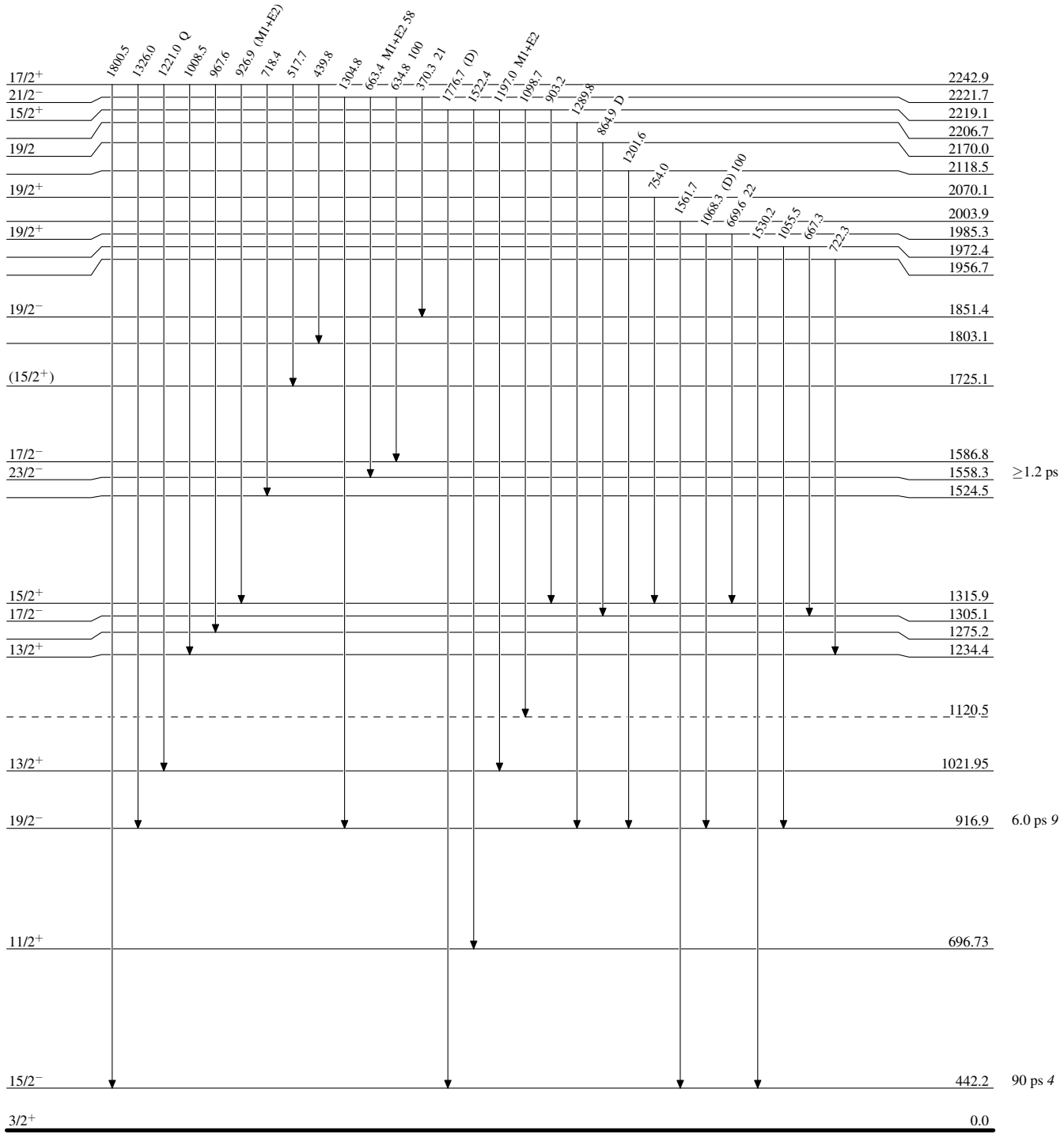


$^{129}_{57}La_{72}$

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36

Level Scheme (continued)

Intensities: Relative photon branching from each level



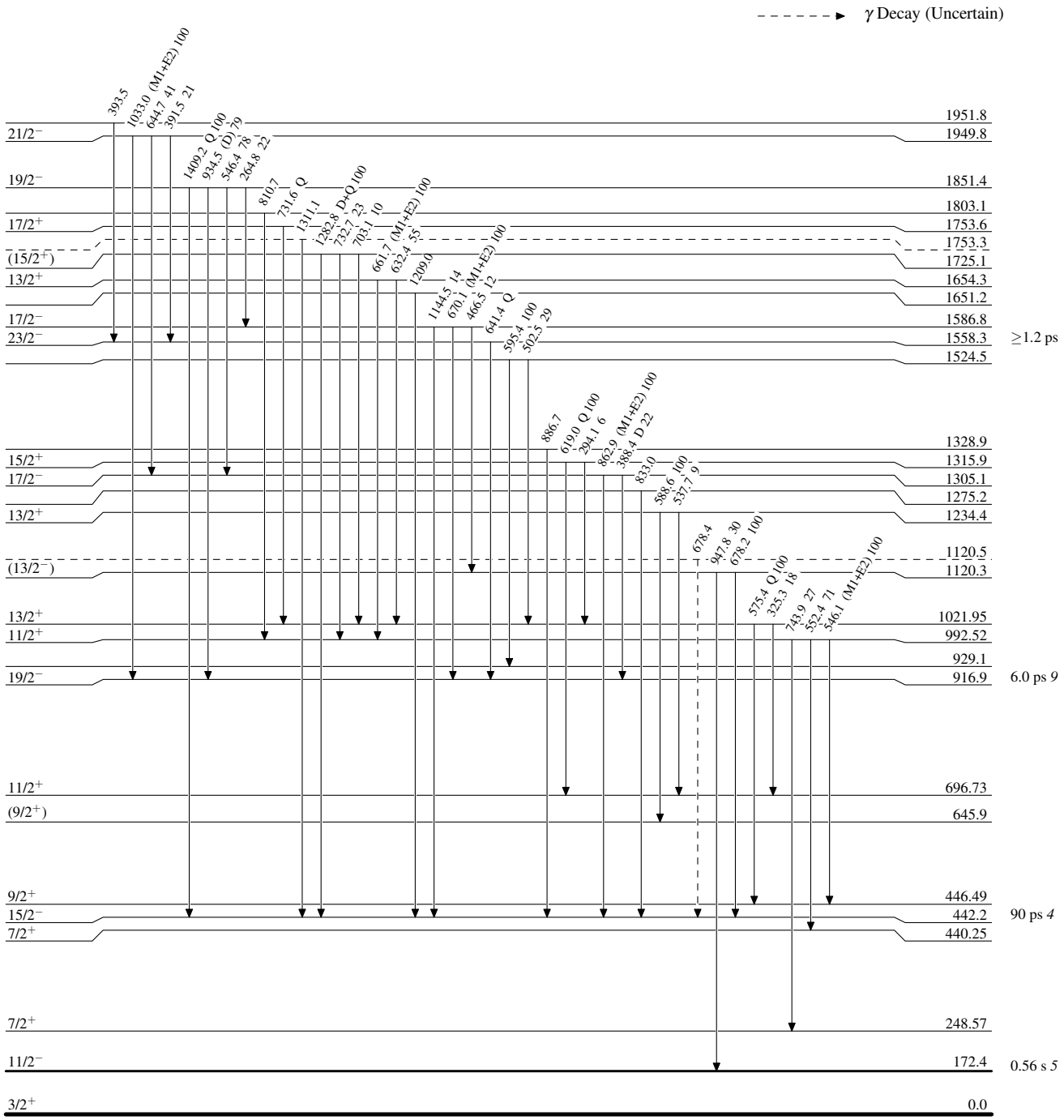
$^{129}_{57}La_{72}$

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

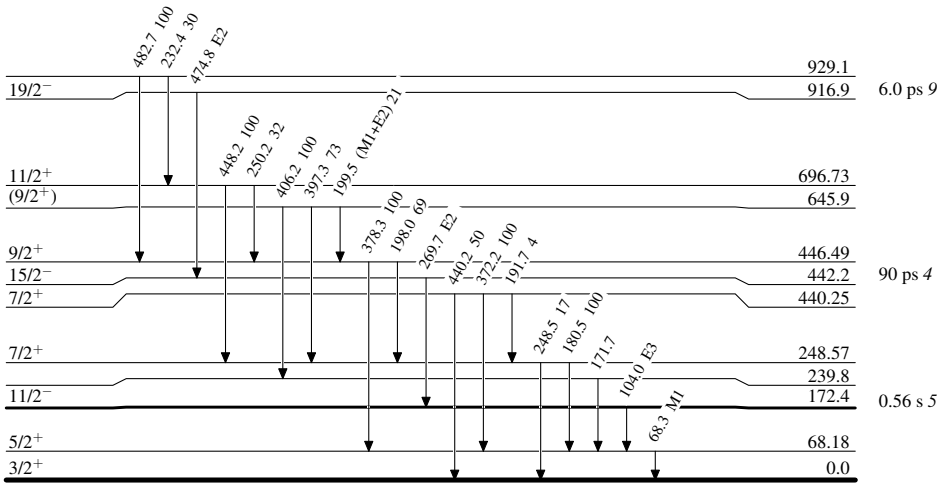


$^{129}_{57}La_{72}$

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36

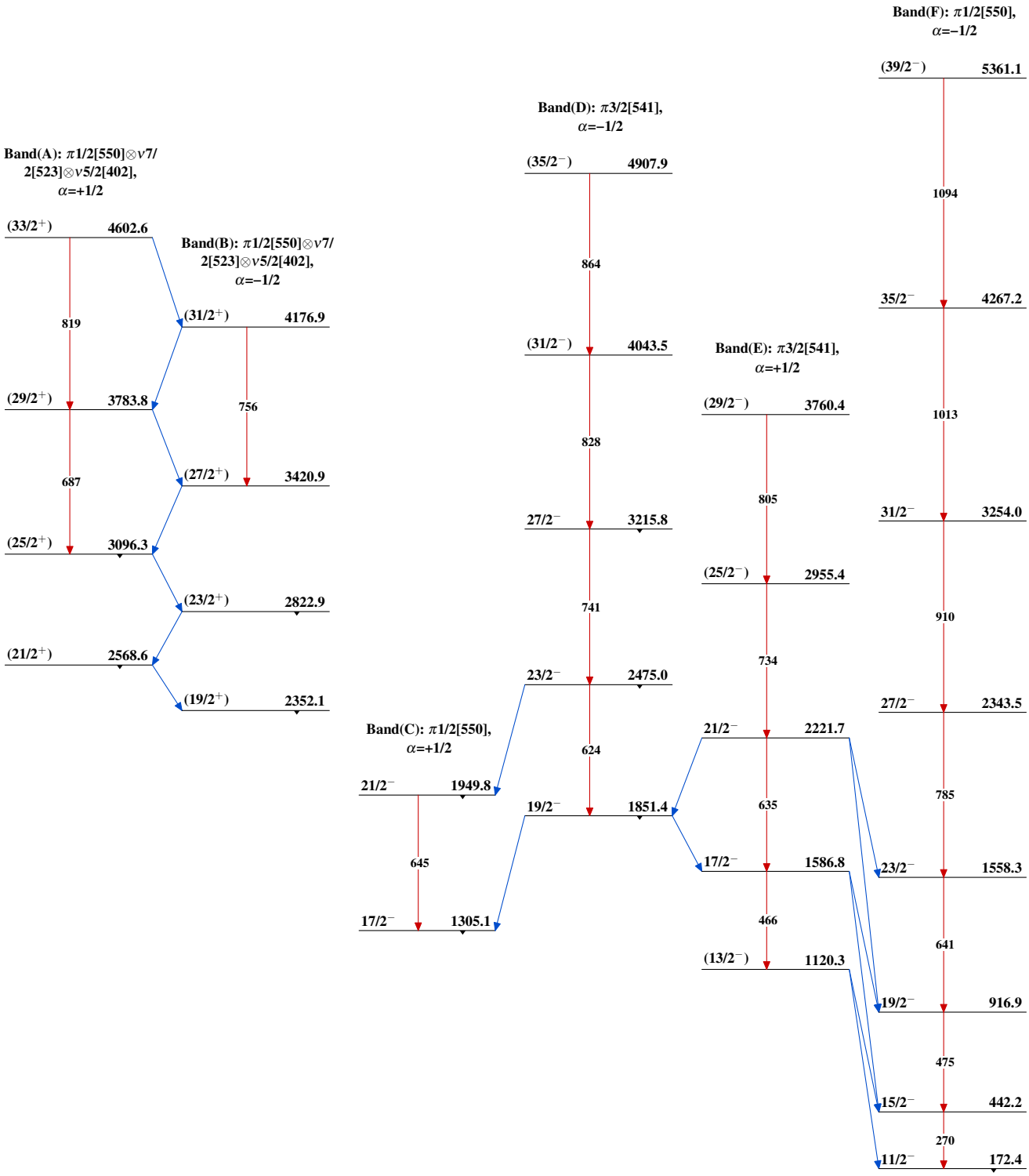
Level Scheme (continued)

Intensities: Relative photon branching from each level



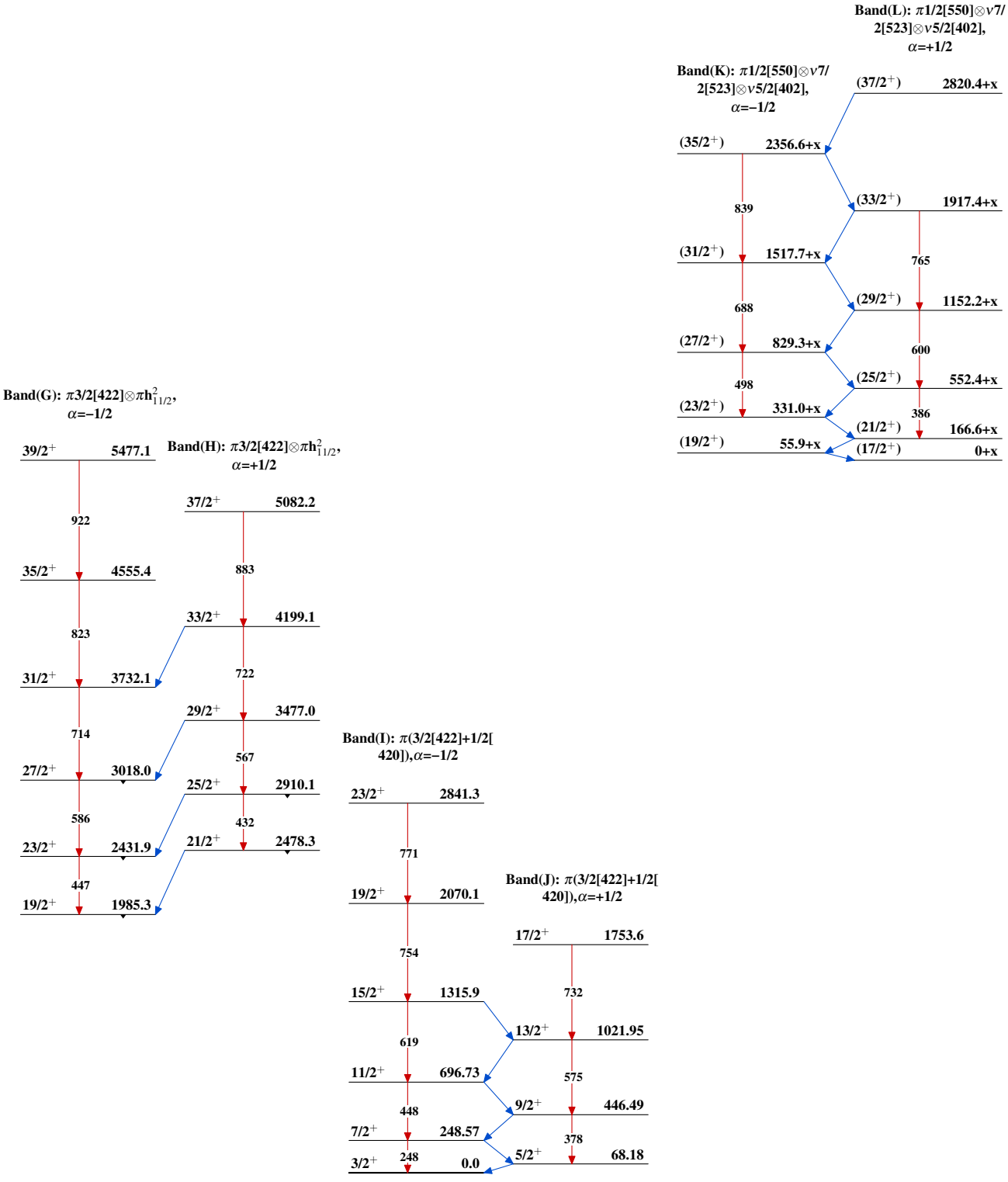
$^{129}_{57}La_{72}$

^{119}Sn(^{14}N,4nγ) 1995Ku29,2008Sa36



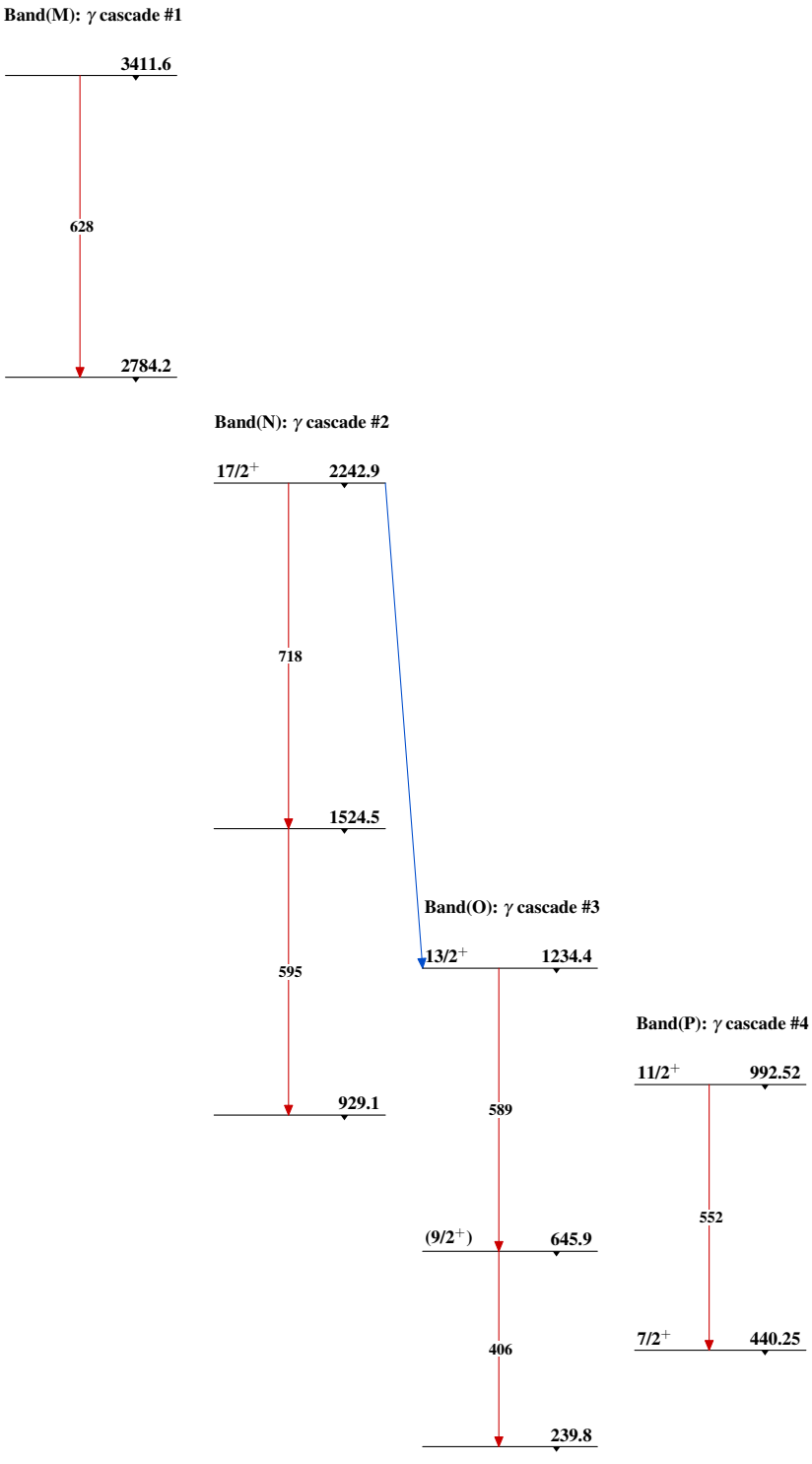
$^{129}_{57}La_{72}$

$^{119}Sn(^{14}N,4n\gamma)$ 1995Ku29,2008Sa36 (continued)



$^{129}_{57}La_{72}$

$^{119}Sn(^{14}N,4n\gamma)$ 1995Ku29,2008Sa36 (continued)



$^{129}_{57}La_{72}$