$^{168}Er(^{30}Si,5n\gamma)$ 1996Du18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 143, 1 (2017)	31-Mar-2017

1996Du18: $^{168}Er(^{30}Si,5n\gamma)$ E=159 MeV; EUROGAM II spectrometer, analysis performed by multi gated spectra and two-dimensional matrices; measured γ, $\gamma\gamma\gamma$, $\gamma(\theta)$.

^{193}Pb Levels

For a discussion of the configurations, bands, and band systematics in Pb nuclei, see 1996Ba54 and 1996Du18.
All level energies are expressed relative to the $13/2^+$ isomeric state.

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	Comments
0.0+x[@]	(13/2$^+$)	5.8 min *2*	Additional information 1. E(level): 130 keV *80* from 13/2$^+$ level systematics (2017Au03). J$^\pi$: From Adopted Levels.
881.6+x[@] *2*	(17/2$^+$)		
1022.2+x[@] *3*	(15/2$^+$)		
1401.7+x[@] *3*	(21/2$^+$)		
1519.5+x[@] *5*	(19/2$^+$)		
1550.0+x[@] *3*	(19/2$^+$)		
1585.9+x[@] *4*	(21/2$^-$)	20.5 ns *4*	
1994.5+x[@] *4*	(25/2$^+$)		
2058.8+x[a] *5*	(23/2$^-$)		
2141.3+x[@] *4*	(23/2$^+$)		
2142.0+x[a] *5*	(25/2$^-$)		
2172.4+x[@] *6*	(23/2$^+$)		
2213.5+x[@] *4*	(25/2$^+$)		
2322.0+x[a] *5*	(27/2$^-$)		
2426.4+x[@] *4*	(27/2$^+$)		
2524.6+x[&] *5*	(27/2$^+$)		
2526.8+x[&] *4*	(29/2$^+$)		Conf.: $\nu(i_{13/2}) \otimes \pi([505]9/2^- \otimes [514]7/2^-)_{K=8}+$ suggested in 1996Du18.
2584.5+x[c] *5*	(29/2$^-$)	9.4 ns *7*	
2612.4+x[&] *5*	(33/2$^+$)	180 ns *15*	
2653.7+x[a] *7*	(27/2$^-$)		
2671.9+x[&] *6*	(29/2$^+$)		
2686.6+x[c] *6*	(31/2$^-$)		
2707.0+x[a] *6*	(29/2$^-$)		
2769.1+x[&] *5*	(29/2$^+$)		
2938.8+x[c] *7*	(33/2$^-$)		
2994.7+x[a] *7*	(31/2$^-$)		
3079.9+x[&] *6*	(29/2$^+$)		
3128.4+x[a] *6*	(31/2$^-$)		
3133.1+x[&] *5*	(31/2$^+$)		
3249.7+x[a] *8*	(31/2$^-$)		
3260.4+x[b] *7*	(31/2$^-$)		
3281.8+x[&] *7*	(33/2$^+$)		
3320.3+x[c] *7*	(35/2$^-$)		

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^{168}Er(^{30}Si,5nγ) 1996Du18 (continued)

^{193}Pb Levels (continued)

E(level)[†]	J^π[‡]	S
3376.2+x[&] 6	$(31/2^+)$	
3414.5+x[&] 6	$(33/2^+)$	
3418.4+x[b] 7	$(33/2^-)$	
3541.7+x[a] 9	$(35/2^-)$	
3542.5+x[&] 6	$(33/2^+)$	
3639.9+x[b] 8	$(37/2^-)$	
3672.7+x[&] 7	$(33/2^+)$	
3702.0+x[&] 6	$(33/2^+)$	
3721.9+x[c] 7	$(37/2^-)$	
3741.6+x[a] 9	$(35/2^-)$	
3771.8+x[&] 6	$(35/2^+)$	
3822.2+x[&] 9	$(35/2^+)$	
3839.2+x[&] 6	$(33/2^+)$	
3906.2+x[b] 8	$(35/2^-)$	
3924.5+x[&] 6	$(35/2^+)$	
3991.4+x[&] 7	$(35/2^+)$	
3996.8+x[&] 6	$(37/2^+)$	
4003.2+x[&] 6	$(35/2^+)$	
4055.5+x[b] 9	$(39/2^-)$	
4062.7+x[b] 8	$(37/2^-)$	
4116.2+x[&] 10	$(37/2^+)$	1.7 3
4135.7+x[c] 8	$(39/2^-)$	
4149.1+x[&] 6	$(37/2^+)$	
4166.8+x[b] 8	$(39/2^-)$	
4181.2+x[a] 8	$(39/2^-)$	
4191.1+x[&] 7	$(39/2^+)$	
4210.7+x[&] 6	$(37/2^+)$	
4270.8+x[b] 8	$(39/2^-)$	
4297.7+x[&] 7	$(39/2^+)$	
4313.1+x[&] 7	$(37/2^+)$	
4360.5+x[&] 11	$(37/2^+)$	
4387.8+x[f] 7	$(41/2^+)$	
4399.0+x[a] 11	$(39/2^-)$	
4435.0+x[a] 11	$(39/2^-)$	
4445.2+x[&] 6	$(39/2^+)$	
4470.2+x[c] 8	$(41/2^-)$	
4532.5+x[b] 8	$(41/2^-)$	
4536.7+x[f] 7	$(43/2^+)$	
4538.4+x[b] 10	$(41/2^-)$	
4564.3+x[&] 9	$(39/2^+)$	
4576.9+x[&] 7	$(41/2^+)$	
4590.9+x[b] 8	$(41/2^-)$	
4661.5+x[&] 11		
4760.3+x[&] 11	$(41/2^+)$	
4768.7+x[f] 8	$(45/2^+)$	
4784.0+x[&] 7	$(41/2^+)$	
4827.8+x[c] 8	$(43/2^-)$	
4861.3+x[b] 8	$(43/2^-)$	
4894.0+x[a] 11	$(43/2^-)$	
4916.6+x[b] 8	$(43/2^-)$	
4944.8+x[g] 8	$(43/2^+)$	
5032.9+x[b] 9	$(43/2^-)$	
5060.3+x[f] 9	$(47/2^+)$	
5092.5+x[d] 8	$(45/2^-)$	
5165.6+x[a] 12	$(43/2^-)$	
5169.1+x[g] 9	$(45/2^+)$	
5181.6+x[b] 8	$(45/2^-)$	
5218.1+x[c] 9	$(45/2^-)$	
5280.7+x[b] 15	$(43/2^-)$	
5331.6+x[d] 8	$(47/2^-)$	
5425.5+x[f] 9	$(49/2^+)$	
5436.6+x[g] 9	$(47/2^+)$	
5439.4+x[b] 10	$(45/2^-)$	
5501.3+x[b] 9	$(47/2^-)$	
5597.2+x[d] 9	$(49/2^-)$	
5667.9+x[b] 15	$(45/2^-)$	
5762.8+x[g] 10	$(49/2^+)$	
5801.8+x[b] 11	$(47/2^-)$	
5815.1+x[f] 9	$(51/2^+)$	
5824.9+x[e] 9	$(49/2^-)$	
5926.7+x[d] 9	$(51/2^-)$	
6001.2+x[e] 10	$(51/2^-)$	
6145.2+x[g] 11	$(51/2^+)$	
6231.2+x[f] 10	$(53/2^+)$	
6284.9+x[e] 10	$(53/2^-)$	
6302.3+x[d] 10	$(53/2^-)$	
6596.8+x[e] 11	$(55/2^-)$	
6657.3+x[f] 10	$(55/2^+)$	
6715.2+x[d] 11	$(55/2^-)$	
6927.2+x[e] 11	$(57/2^-)$	
7090.0+x[f] 11	$(57/2^+)$	
7154.4+x[d] 12	$(57/2^-)$	
7311.7+x[e] 12	$(59/2^-)$	
7516.0+x?[f]	$(59/2^+)$	
7713.2+x[e] 13	$(61/2^-)$	
7932.0+x?[f]	$(61/2^+)$	

† From least-squares fit to Eγ.

‡ From 1996Du18 based on $\gamma(\theta)$, rotational behaviour with regularly spaced transitions, and literature data.

From Adopted values.

@ Group A Group of low-energy positive-parity states, which connect all higher-lying levels with the $13/2^+$ isomeric state.

& Group B Group of positive-parity states linking Bands 2 and 3, plus some other medium-energy positive-parity levels, with those of Group A.

a Group C Negative-parity levels above the 1586-keV $21/2^-$ isomeric state.

b Group D Negative-parity levels above the 2584-keV $29/2^-$ isomeric state, excluding those grouped in Bands 1, 1a and 1b.

c Band(A): Magnetic dipole band 1 (A11). Configuration $\nu(i13/2) \otimes \pi([505]9/2^- \otimes [606]13/2^+)_{K=11}$-. Extracted mean value B(M1)/B(E2)=22 7 $(\mu_N/eb)^2$.

d Band(B): Magnetic dipole band 1a (ABC11). Configuration $\nu(i13/2)^3 \otimes \pi([505]9/2^- \otimes [606]13/2^+)_{K=11}$-.

e Band(C): Magnetic dipole band 1b. Configuration unknown.

f Band(D): Magnetic dipole band 2 (ABE11). Configuration $\nu((i13/2)^2 \otimes ((p3/2)\ or\ (f5/2))) \otimes \pi([505]9/2^- \otimes [606]13/2^+)_{K=11}$-.

g Band(E): Magnetic dipole band 3 (ABF11). Configuration $\nu((i13/2)^2 \otimes ((p3/2)\ or\ (f5/2))) \otimes \pi([505]9/2^- \otimes [606]13/2^+)_{K=11}$-.

^{168}Er(^{30}Si,5nγ) 1996Du18 (continued)

γ(^{193}Pb)

E_γ[†]	I_γ[f]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[h]	α[i]	$I_{(\gamma+ce)}$[g]	Comments
(40.9[‡])		2213.5+x	(25/2+)	2172.4+x	(23/2+)				
(41.5[#])		4191.1+x	(39/2+)	4149.1+x	(37/2+)				
(66.5[‡])		1585.9+x	(21/2−)	1519.5+x	(19/2+)				
72.1[‡]		2213.5+x	(25/2+)	2141.3+x	(23/2+)				
85.6[#] *3*		2612.4+x	(33/2+)	2526.8+x	(29/2+)	Q			
90.0[d] *3*		4387.8+x	(41/2+)	4297.7+x	(39/2+)				
98.2[#] *3*		2524.6+x	(27/2+)	2426.4+x	(27/2+)			5.5 *5*	
102.1[a] *3*		2686.6+x	(31/2−)	2584.5+x	(29/2−)	D		16.5 *15*	A_2=−0.35 *13*.
146.0[#] *3*	1.48 *19*	4149.1+x	(37/2+)	4003.2+x	(35/2+)	D		6.2 *8*	A_2=−0.35 *11*. α: 3.18 for (M1).
148.4[#] *3*		4297.7+x	(39/2+)	4149.1+x	(37/2+)	D		9.7 *16*	A_2=−0.42 *14*.
148.9[d] *3*		4536.7+x	(43/2+)	4387.8+x	(41/2+)	D		6.6 *10*	A_2=−0.62 *19*.
156.5[&] *3*		4062.7+x	(37/2−)	3906.2+x	(35/2−)			0.7 *3*	
158.0[&] *3*	0.17 *8*	3418.4+x	(33/2−)	3260.4+x	(31/2−)	[M1]	2.54	0.6 *3*	
158.1[‡] *3*		2584.5+x	(29/2−)	2426.4+x	(27/2+)	D		18.6 *17*	A_2=−0.21 *4*.
164.0[#] *3*	2.25 *24*	4003.2+x	(35/2+)	3839.2+x	(33/2+)	D		7.4 *8*	A_2=−0.41 *10*. α: 2.29 for (M1).
175.9[&] *3*	0.07 *7*	5092.5+x	(45/2−)	4916.6+x	(43/2−)	D		0.2 *2*	A_2=−0.32 *15*. α: 1.88 for (M1).
176.3[c] *3*		6001.2+x	(51/2−)	5824.9+x	(49/2−)	D+Q		0.6 *2*	A_2=−0.47 *9*.
180.0[@] *3*	3.4 *2*	2322.0+x	(27/2−)	2142.0+x	(25/2−)	D		5.7 *4*	A_2=−0.12 *6*. α: 0.69 for (M1).
184.0[‡] *3*		1585.9+x	(21/2−)	1401.7+x	(21/2+)	D+Q		13.6 *13*	A_2=+0.12 *5*.
196.9[#] *3*	1.48 *34*	4387.8+x	(41/2+)	4191.1+x	(39/2+)	D		3.5 *8*	A_2=−0.19 *15*. α: 1.368 for (M1).
204.6[@] *3*		2526.8+x	(29/2+)	2322.0+x	(27/2−)			0.3 *1*	
208.0[&] *3*		4270.8+x	(39/2−)	4062.7+x	(37/2−)	D		1.2 *3*	A_2=−0.06 *12*.
212.9[‡] *3*		2426.4+x	(27/2+)	2213.5+x	(25/2+)	D		25.9 *22*	A_2=−0.18 *7*.
219.0[‡] *3*		2213.5+x	(25/2+)	1994.5+x	(25/2+)			8.4 *8*	A_2=+0.19 *11*. Mult.: The angular distribution coefficient value indicates stretched quadrupole. (M1) in Adopted Gammas.
224.3[e] *3*		5169.1+x	(45/2+)	4944.8+x	(43/2+)	D+Q		2.5 *4*	A_2=−0.57 *10*.
231.1[&] *3*	0.54 *21*	5092.5+x	(45/2−)	4861.3+x	(43/2−)	D		1.0 *4*	A_2=−0.22 *15*. α: 0.875 for (M1).
232.0[d] *3*		4768.7+x	(45/2+)	4536.7+x	(43/2+)	D		6.9 *10*	A_2=−0.34 *9*.
234.5[#] *3*	0.60 *16*	4445.2+x	(39/2+)	4210.7+x	(37/2+)	[M1]	0.840	1.1 *3*	
239.1[b] *3*		5331.6+x	(47/2−)	5092.5+x	(45/2−)	D		0.6 *3*	A_2=−0.20 *14*.
252.3[a] *3*		2938.8+x	(33/2−)	2686.6+x	(31/2−)	D		17.2 *11*	A_2=−0.32 *5*.
261.7[&] *3*	0.50 *18*	4532.5+x	(41/2−)	4270.8+x	(39/2−)	D		0.8 *3*	A_2=−0.32 *11*. α: 0.62 for (M1).
263.1[@] *3*	0.6 *2*	2322.0+x	(27/2−)	2058.8+x	(23/2−)	[E2]	0.1727	0.7 *2*	
264.8[&] *3*	0.19	5092.5+x	(45/2−)	4827.8+x	(43/2−)	[M1]	0.601	0.3 *2*	
265.6[b] *3*		5597.2+x	(49/2−)	5331.6+x	(47/2−)	D		0.5 *2*	A_2=−0.30 *16*.
267.5[e] *3*		5436.6+x	(47/2+)	5169.1+x	(45/2+)	D		2.8 *3*	A_2=−0.24 *12*.
279.2[#] *3*		4576.9+x	(41/2+)	4297.7+x	(39/2+)	D		5.4 *6*	A_2=−0.19 *19*.

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^{168}Er(^{30}Si,5nγ) 1996Du18 (continued)

γ(^{193}Pb) (continued)

E_γ[†]	I_γ[f]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[h]	α[i]	$I_{(\gamma+ce)}$[g]	Comments
283.7[c] 3		6284.9+x	(53/2−)	6001.2+x	(51/2−)	D		0.5 2	A_2=−0.39 9.
291.6[d] 3		5060.3+x	(47/2+)	4768.7+x	(45/2+)	D		7.0 7	A_2=−0.33 5.
294.8[#] 3	0.18 9	3996.8+x	(37/2+)	3702.0+x	(33/2+)	(Q)		0.2 1	A_2=+0.13 19. α: 0.1217 for (E2).
295.2[&] 3	0.21 14	4827.8+x	(43/2−)	4532.5+x	(41/2−)	D		0.3 2	A_2=−0.17 16. α: 0.446 for (M1).
296.3[#] 3		3376.2+x	(31/2+)	3079.9+x	(29/2+)	D		7.9 5	A_2=−0.40 9.
296.4[#] 3	0.42 21	4445.2+x	(39/2+)	4149.1+x	(37/2+)	[M1]	0.441	0.6 3	
303.4[&] 3		4470.2+x	(41/2−)	4166.8+x	(39/2−)	D		0.8 3	A_2=−0.39 11.
311.1[#] 3		2524.6+x	(27/2+)	2213.5+x	(25/2+)			16.3 10	Mult.: A_2=−0.32 10 indicates D. Placement from (27/2+) to (23/2+).
311.9[c] 3		6596.8+x	(55/2−)	6284.9+x	(53/2−)	D		0.4 3	A_2=−0.38 14.
319.6[&] 3		3639.9+x	(37/2−)	3320.3+x	(35/2−)	D		1.6 4	A_2=−0.39 19.
319.7[&] 3		5501.3+x	(47/2−)	5181.6+x	(45/2−)	D		0.7 3	A_2=−0.27 19.
323.6[&] 3		5824.9+x	(49/2−)	5501.3+x	(47/2−)	D		0.9 3	A_2=−0.34 11.
324.0[#] 3	0.18 9	3996.8+x	(37/2+)	3672.7+x	(33/2+)	[E2]	0.0922	0.2 1	
325.7[&] 3		4916.6+x	(43/2−)	4590.9+x	(41/2−)			0.3 2	
326.2[e] 3		5762.8+x	(49/2+)	5436.6+x	(47/2+)	D		2.2 2	A_2=−0.34 10.
328.8[&] 3	0.30 15	4861.3+x	(43/2−)	4532.5+x	(41/2−)	[M1]	0.332	0.4 2	
329.5[b] 3		5926.7+x	(51/2−)	5597.2+x	(49/2−)	D+Q		0.5 3	A_2=−0.53 13.
330.4[c] 3		6927.2+x	(57/2−)	6596.8+x	(55/2−)	D+Q		0.4 2	A_2=−0.44 10.
334.5[a] 3		4470.2+x	(41/2−)	4135.7+x	(39/2−)	D		2.8 2	A_2=−0.33 13.
338.7[#] 3		4784.0+x	(41/2+)	4445.2+x	(39/2+)			0.5 2	
341.0[@] 3		2994.7+x	(31/2−)	2653.7+x	(27/2−)	(Q)		0.6 2	A_2=+0.13 19.
342.7[#] 3		2769.1+x	(29/2+)	2426.4+x	(27/2+)	D		10.5 6	A_2=−0.28 5.
353.7[&] 4		5181.6+x	(45/2−)	4827.8+x	(43/2−)	D		1.2 3	A_2=−0.31 9.
357.7[b] 4	1.4 3	4827.8+x	(43/2−)	4470.2+x	(41/2−)	D		1.8 4	A_2=−0.57 16. α: 0.264 for (M1).
362.4[&] 4		5801.8+x	(47/2−)	5439.4+x	(45/2−)			0.2 2	
364.0[#] 4	6.2 4	3133.1+x	(31/2+)	2769.1+x	(29/2+)	D		7.8 5	A_2=−0.36 11. α: 0.252 for (M1).
365.2[d] 4	4.6 4	5425.5+x	(49/2+)	5060.3+x	(47/2+)	D		5.7 5	A_2=−0.38 5. α: 0.25 for (M1).
367.9[#] 4		4944.8+x	(43/2+)	4576.9+x	(41/2+)	D		4.3 6	A_2=−0.19 8.
375.6[b] 4		6302.3+x	(53/2−)	5926.7+x	(51/2−)	D+Q		0.4 3	A_2=−0.59 15.
377.3[#] 4	0.49 24	4149.1+x	(37/2+)	3771.8+x	(35/2+)	[M1]	0.229	0.6 3	
381.5[a] 4		3320.3+x	(35/2−)	2938.8+x	(33/2−)	D		13.0 5	A_2=−0.36 5.
382.0[#] 4	2.0 3	3924.5+x	(35/2+)	3542.5+x	(33/2+)	D		2.4 4	A_2=−0.18 12. α: 0.221 for (M1).
382.4[e] 4		6145.2+x	(51/2+)	5762.8+x	(49/2+)	D+Q		1.4 3	A_2=−0.43 8.
384.5[c] 4		7311.7+x	(59/2−)	6927.2+x	(57/2−)	D		0.3 2	A_2=−0.21 19.
385.0[@] 4		2707.0+x	(29/2−)	2322.0+x	(27/2−)			0.6 3	
388.7[#] 4	1.0 4	4313.1+x	(37/2+)	3924.5+x	(35/2+)	[M1]	0.211	1.2 5	
389.6[d] 4	3.41 33	5815.1+x	(51/2+)	5425.5+x	(49/2+)	D		4.1 4	A_2=−0.29 7. α: 0.21 for (M1).
390.3[b] 4		5218.1+x	(45/2−)	4827.8+x	(43/2−)	D		1.3 3	A_2=−0.29 13.

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^{168}Er(^{30}Si,5nγ) 1996Du18 (continued)

γ(^{193}Pb) (continued)

E_γ[†]	I_γ[f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[h]	α[i]	$I_{(\gamma+ce)}$[g]	Comments
390.8 4	0.33 25	4861.3+x	(43/2⁻)	4470.2+x	(41/2⁻)	D		0.4 3	A_2=−0.34 21. α: 0.208 for (M1).
395.8[#] 4		3771.8+x	(35/2⁺)	3376.2+x	(31/2⁺)	Q		5.6 6	A_2=+0.21 6.
396.6[&] 4	0.34 25	4532.5+x	(41/2⁻)	4135.7+x	(39/2⁻)	[M1]	0.2	0.4 3	
401.5[c] 4		7713.2+x	(61/2⁻)	7311.7+x	(59/2⁻)			0.2 1	
401.6[a] 4		3721.9+x	(37/2⁻)	3320.3+x	(35/2⁻)	D		7.7 4	A_2=−0.37 7.
406.5[&] 4		5439.4+x	(45/2⁻)	5032.9+x	(43/2⁻)	D		0.5 3	A_2=−0.18 26.
409.5[#] 4		3542.5+x	(33/2⁺)	3133.1+x	(31/2⁺)	D		4.7 4	A_2=−0.46 8.
412.9[b] 4		6715.2+x	(55/2⁻)	6302.3+x	(53/2⁻)			0.3 1	
413.8[a] 4		4135.7+x	(39/2⁻)	3721.9+x	(37/2⁻)	D		4.0 3	A_2=−0.39 14.
415.6[&] 4		4055.5+x	(39/2⁻)	3639.9+x	(37/2⁻)	(D)		1.3 3	A_2=−0.08 15.
416.1[d] 4	2.74 34	6231.2+x	(53/2⁺)	5815.1+x	(51/2⁺)	[M1]	0.176	3.2 4	
416.1[dj] 10		7932.0+x?	(61/2⁺)	7516.0+x?	(59/2⁺)			0.2 2	
419.6[#] 4		4191.1+x	(39/2⁺)	3771.8+x	(35/2⁺)	Q		1.5 4	A_2=+0.23 10.
421.4[@] 4		3128.4+x	(31/2⁻)	2707.0+x	(29/2⁻)			0.5 2	
424.1[&] 4		4590.9+x	(41/2⁻)	4166.8+x	(39/2⁻)	D		1.1 2	A_2=−0.20 13.
426.1[d] 4	1.04 17	6657.3+x	(55/2⁺)	6231.2+x	(53/2⁺)	[M1]	0.1652	1.2 2	
426.1[dj] 10		7516.0+x?	(59/2⁺)	7090.0+x	(57/2⁺)			0.4 3	
431.9[‡] 4		2426.4+x	(27/2⁺)	1994.5+x	(25/2⁺)			3.4 7	A_2=+0.28 14. Mult.: A2 value implies Q, however, placement 27/2⁺ to 25/2⁺ in 1996Du18.
432.7[d] 4	0.52 17	7090.0+x	(57/2⁺)	6657.3+x	(55/2⁺)	[M1]	0.1586	0.6 2	
438.7[#] 4		4210.7+x	(37/2⁺)	3771.8+x	(35/2⁺)	D		1.7 4	A_2=−0.27 10.
439.2[b] 4		7154.4+x	(57/2⁻)	6715.2+x	(55/2⁻)	D		0.2 1	A_2=−0.20 26.
442.0[&] 4		5032.9+x	(43/2⁻)	4590.9+x	(41/2⁻)	D		0.4 3	A_2=−0.49 19.
444.9[&] 4		4166.8+x	(39/2⁻)	3721.9+x	(37/2⁻)	D		2.5 4	A_2=−0.23 8.
448.1[#] 4	1.31 35	4445.2+x	(39/2⁺)	3996.8+x	(37/2⁺)	[M1]	0.1444	1.5 4	
448.9[#] 4		3991.4+x	(35/2⁺)	3542.5+x	(33/2⁺)			0.6 3	
455.3[&] 5		4590.9+x	(41/2⁻)	4135.7+x	(39/2⁻)			0.6 3	
461.2[#] 5	0.44 18	4003.2+x	(35/2⁺)	3542.5+x	(33/2⁺)	[M1]	0.1338	0.5 2	
461.5[#] 5	0.56 24	3133.1+x	(31/2⁺)	2671.9+x	(29/2⁺)	[M1]	0.1335	0.7 3	
462.9[#] 5		3839.2+x	(33/2⁺)	3376.2+x	(31/2⁺)	D		14.3 11	A_2=−0.35 10.
472.7[@] 5		2058.8+x	(23/2⁻)	1585.9+x	(21/2⁻)	D		1.3 5	A_2=−0.30 13.
482.9[&] 5		4538.4+x	(41/2⁻)	4055.5+x	(39/2⁻)	D		1.0 2	A_2=−0.21 11.
487.8[&] 5		3906.2+x	(35/2⁻)	3418.4+x	(33/2⁻)	D		0.6 3	A_2=−0.18 11.
497.3[‡] 5		1519.5+x	(19/2⁺)	1022.2+x	(15/2⁺)	Q		1.0 4	A_2=+1.1 4.
510.2[#] 5	0.46 18	3924.5+x	(35/2⁺)	3414.5+x	(33/2⁺)	[M1]		0.5 2	
520.1[‡] 2		1401.7+x	(21/2⁺)	881.6+x	(17/2⁺)	Q		81.9 35	A_2=+0.20 5.
527.8[‡] 3		1550.0+x	(19/2⁺)	1022.2+x	(15/2⁺)	Q		13.8 10	A_2=+0.18 10.
532.4[#] 3		2526.8+x	(29/2⁺)	1994.5+x	(25/2⁺)			3.5 5	A_2=+0.10 8.
540.4[#] 5		3822.2+x	(35/2⁺)	3281.8+x	(33/2⁺)			0.2 2	
542.7[@] 5		3249.7+x	(31/2⁻)	2707.0+x	(29/2⁻)			0.4 2	A_2=+0.01 19.
545.3[#] 5		4661.5+x		4116.2+x	(37/2⁺)			0.2 1	
547.0[@] 5		3541.7+x	(35/2⁻)	2994.7+x	(31/2⁻)	Q		1.3 4	A_2=0.26 12.
555.4[#] 6		3079.9+x	(29/2⁺)	2524.6+x	(27/2⁺)	D		12.2 1	A_2=−0.43 8.

Continued on next page (footnotes at end of table)

^{168}Er(^{30}Si,5nγ) 1996Du18 (continued)

γ(^{193}Pb) (continued)

E_γ[†]	I_γ[f]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[h]	α[i]	$I_{(\gamma+ce)}$[g]	Comments
556.0[@] 4		2142.0+x	(25/2⁻)	1585.9+x	(21/2⁻)	Q		6.1 5	A_2=+0.30 5.
565.0[@] 6		2707.0+x	(29/2⁻)	2142.0+x	(25/2⁻)			1.3 3	A_2=+0.26 12.
567.5[#] 6		4564.3+x	(39/2⁺)	3996.8+x	(37/2⁺)			1.2 4	
581.8[#] 6	1.1 4	3996.8+x	(37/2⁺)	3414.5+x	(33/2⁺)	(Q)		1.1 4	A_2=+0.15 14. α: 0.0206 for (E2).
591.1[‡] 4		2141.3+x	(23/2⁺)	1550.0+x	(19/2⁺)	Q		28.3 17	A_2=+0.22 10.
593.1[‡] 4		1994.5+x	(25/2⁺)	1401.7+x	(21/2⁺)	Q		34.6 21	A_2=+0.19 7.
595.0[@] 6		2653.7+x	(27/2⁻)	2058.8+x	(23/2⁻)			0.7 4	
609.9[#] 6	1.2 3	3281.8+x	(33/2⁺)	2671.9+x	(29/2⁺)	Q		1.2 3	A_2=+0.50 14. α: 0.0185 for (E2).
613.2[@] 6		3741.6+x	(35/2⁻)	3128.4+x	(31/2⁻)	Q		1.7 5	A_2=+0.30 11.
622.3[‡] 6		2172.4+x	(23/2⁺)	1550.0+x	(19/2⁺)			4.4 8	
633.8[a] 6		3320.3+x	(35/2⁻)	2686.6+x	(31/2⁻)			0.5 2	
638.7[@] 6		4181.2+x	(39/2⁻)	3541.7+x	(35/2⁻)	Q		0.8 3	A_2=+0.21 13.
644.1[#] 6		4760.3+x	(41/2⁺)	4116.2+x	(37/2⁺)	Q		0.4 2	A_2=+0.39 23.
656.8[d] 7	0.6 2	5425.5+x	(49/2⁺)	4768.7+x	(45/2⁺)	[E2]	0.01576	0.6 2	
657.4[@] 7		4399.0+x	(39/2⁻)	3741.6+x	(35/2⁻)	Q		0.4 2	A_2=+0.21 25.
668.2[‡] 3		1550.0+x	(19/2⁺)	881.6+x	(17/2⁺)	D+Q		18.9 13	A_2=−0.46 11.
672.6[@] 7		2994.7+x	(31/2⁻)	2322.0+x	(27/2⁻)	Q		1.2 4	A_2=+0.19 12.
675.8[&] 7		3260.4+x	(31/2⁻)	2584.5+x	(29/2⁻)			1.0 3	
677.6[#] 7		2671.9+x	(29/2⁺)	1994.5+x	(25/2⁺)	Q		12.5 12	A_2=+0.19 8.
692.3[b] 7	0.1 1	4827.8+x	(43/2⁻)	4135.7+x	(39/2⁻)	[E2]	0.01407	0.1 1	
693.4[@] 7		4435.0+x	(39/2⁻)	3741.6+x	(35/2⁻)	Q		0.5 2	A_2=+0.39 22.
701.7[#] 7		4116.2+x	(37/2⁺)	3414.5+x	(33/2⁺)	Q			A_2=+0.24 12.
706.7[#] 7	1.6 2	3133.1+x	(31/2⁺)	2426.4+x	(27/2⁺)	[E2]	0.01346	1.6 2	A_2=+0.40 23.
711.7[&] 7		5181.6+x	(45/2⁻)	4470.2+x	(41/2⁻)			0.1 1	
712.8[@] 7		4894.0+x	(43/2⁻)	4181.2+x	(39/2⁻)	Q		0.4 2	A_2=+0.83 33.
730.6[@] 7		5165.6+x	(43/2⁻)	4435.0+x	(39/2⁻)	Q		0.4 2	
739.7[‡] 3		2141.3+x	(23/2⁺)	1401.7+x	(21/2⁺)	D+Q		23.8 14	A_2=−0.45 7.
742.3[#] 7		3414.5+x	(33/2⁺)	2671.9+x	(29/2⁺)	Q		5.3 8	A_2=+0.22 8.
748.3[a] 7		4470.2+x	(41/2⁻)	3721.9+x	(37/2⁻)			0.4 2	
754.7[d] 8	0.8 2	5815.1+x	(51/2⁺)	5060.3+x	(47/2⁺)	[E2]	0.01173	0.8 2	
755.1[#] 8	1.0 2	3281.8+x	(33/2⁺)	2526.8+x	(29/2⁺)	Q		1.0 2	A_2=+0.37 12. α: 0.0117 for (E2).
759.4[#] 8		3839.2+x	(33/2⁺)	3079.9+x	(29/2⁺)	Q		2.6 3	A_2=+0.25 11.
766.6[@] 8		5165.6+x	(43/2⁻)	4399.0+x	(39/2⁻)			0.2 1	
770.2[#] 8	0.4 5	4313.1+x	(37/2⁺)	3542.5+x	(33/2⁺)	[E2]	0.01124	0.4 5	
773.5[#] 8		3542.5+x	(33/2⁺)	2769.1+x	(29/2⁺)			0.7 3	
783.1[a] 8		3721.9+x	(37/2⁻)	2938.8+x	(33/2⁻)	Q		1.0 2	A_2=+0.20 19.
791.5[#] 8	0.8 2	3924.5+x	(35/2⁺)	3133.1+x	(31/2⁺)	Q		0.8 2	A_2=+0.8 3. α: 0.01063 for (E2).
805.6[d] 8	0.2 1	6231.2+x	(53/2⁺)	5425.5+x	(49/2⁺)	[E2]	0.01025	0.2 1	
806.4[@] 8		3128.4+x	(31/2⁻)	2322.0+x	(27/2⁻)	Q		2.0 4	A_2=+0.37 18.
811.9[‡] 4		2213.5+x	(25/2⁺)	1401.7+x	(21/2⁺)	Q		8.0 5	A_2=+0.25 8.
815.4[a] 8		4135.7+x	(39/2⁻)	3320.3+x	(35/2⁻)			0.8 2	
834.0[&] 8	1.3 4	3418.4+x	(33/2⁻)	2584.5+x	(29/2⁻)	Q		1.3 4	A_2=+0.56 14. α: 0.00955 for (E2).

Continued on next page (footnotes at end of table)

^{168}Er(^{30}Si,5nγ) 1996Du18 (continued)

γ(^{193}Pb) (continued)

E_γ[†]	I_γ[f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[h]	α[i]	$I_{(\gamma+ce)}$[g]	Comments
842.2[d] *8*	0.3 *1*	6657.3+x	(55/2$^+$)	5815.1+x	(51/2$^+$)	[E2]	0.00936	0.3 *1*	
846.5[&] *8*		4166.8+x	(39/2$^-$)	3320.3+x	(35/2$^-$)			0.2 *1*	
851.7[#] *9*		3376.2+x	(31/2$^+$)	2524.6+x	(27/2$^+$)	Q		15.4 *12*	A_2=+0.17 *9*.
858.8[d] *9*	0.1 *1*	7090.0+x	(57/2$^+$)	6231.2+x	(53/2$^+$)	[E2]	0.009	0.1 *1*	
869.1[&] *9*		4590.9+x	(41/2$^-$)	3721.9+x	(37/2$^-$)			0.1 *1*	
881.6[‡] *2*		881.6+x	(17/2$^+$)	0.0+x	(13/2$^+$)	Q		100	A_2=+0.19 *5*.
946.0[#] *9*		4360.5+x	(37/2$^+$)	3414.5+x	(33/2$^+$)			0.1 *1*	
1022.3[‡] *3*		1022.2+x	(15/2$^+$)	0.0+x	(13/2$^+$)	D+Q		14.3 *5*	A_2=−0.11 *9*.
1030.1[#] *10*	0.1 *1*	3702.0+x	(33/2$^+$)	2671.9+x	(29/2$^+$)	[E2]	0.00629	0.1 *1*	
1129.5[&] *11*		5667.9+x	(45/2$^-$)	4538.4+x	(41/2$^-$)			0.2 *1*	
1145.2[#] *11*		3672.7+x	(33/2$^+$)	2526.8+x	(29/2$^+$)	Q		0.3 *1*	A_2=+0.38 *33*.
1174.9[#] *11*	0.2 *1*	3702.0+x	(33/2$^+$)	2526.8+x	(29/2$^+$)	[E2]	0.00489	0.2 *1*	
1225.2[&] *12*		5280.7+x	(43/2$^-$)	4055.5+x	(39/2$^-$)			0.2 *1*	

† Energy uncertainty not specified by the authors. An uncertainty of ≈ 0.1% (with a minimum uncertainty ≈ 0.3 keV) was assigned in previous evaluations (1998Ar07) from comparison with other results from EUROGRAM II (see e.g. 1996Du05). For the present revision the evaluator have adopted slightly narrower error bounds, based on the excellent overall agreement with the energy differences obtained from the least-squares level energy adjustment.

‡ Group A. γ rays between low-lying positive-parity states, which carry all the transition intensity from higher-lying groups and bands, feeding the 5.8 min, 13/2$^+$ isomeric level.

\# Group B. γ rays between medium-energy positive-parity states, carrying the transitions intensity from Bands 2 and 3, and from some other medium-energy levels, and feeding those of Group A.

@ Group C. γ rays connecting negative parity-levels above the 1586-keV isomeric state.

& Group D. γ rays connecting negative parity-levels above the 2584-keV isomeric state. Transitions in this group also connect to levels in Band 1, and to those deexciting Bands 1a and 1b.

a Band 1 transition.

b Band 1a transition.

c Band 1b transition.

d Band 2 transition.

e Band 3 transition.

f Deduced by evaluator using reported total transition intensity in 1996Du18 and conversion coefficients for assigned/assumed multipolarity. Assuming (M1) for d, (E2) for Q, and (M1+E2) for D+Q or from level scheme.

g Total transition intensity values reported in 1996Du18.

h Assigned by the evaluator based on A_2 values and proposed level scheme of 1996Du18. Assumed multipolarities in square brakets were used to obtain conversion coefficient to estimate Iγ from reported total transition intensity by 1996Du18.

i 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.

j Placement of transition in the level scheme is uncertain.

$^{168}Er(^{30}Si,5n\gamma)$ 1996Du18

Level Scheme

Intensities: Relative I_γ

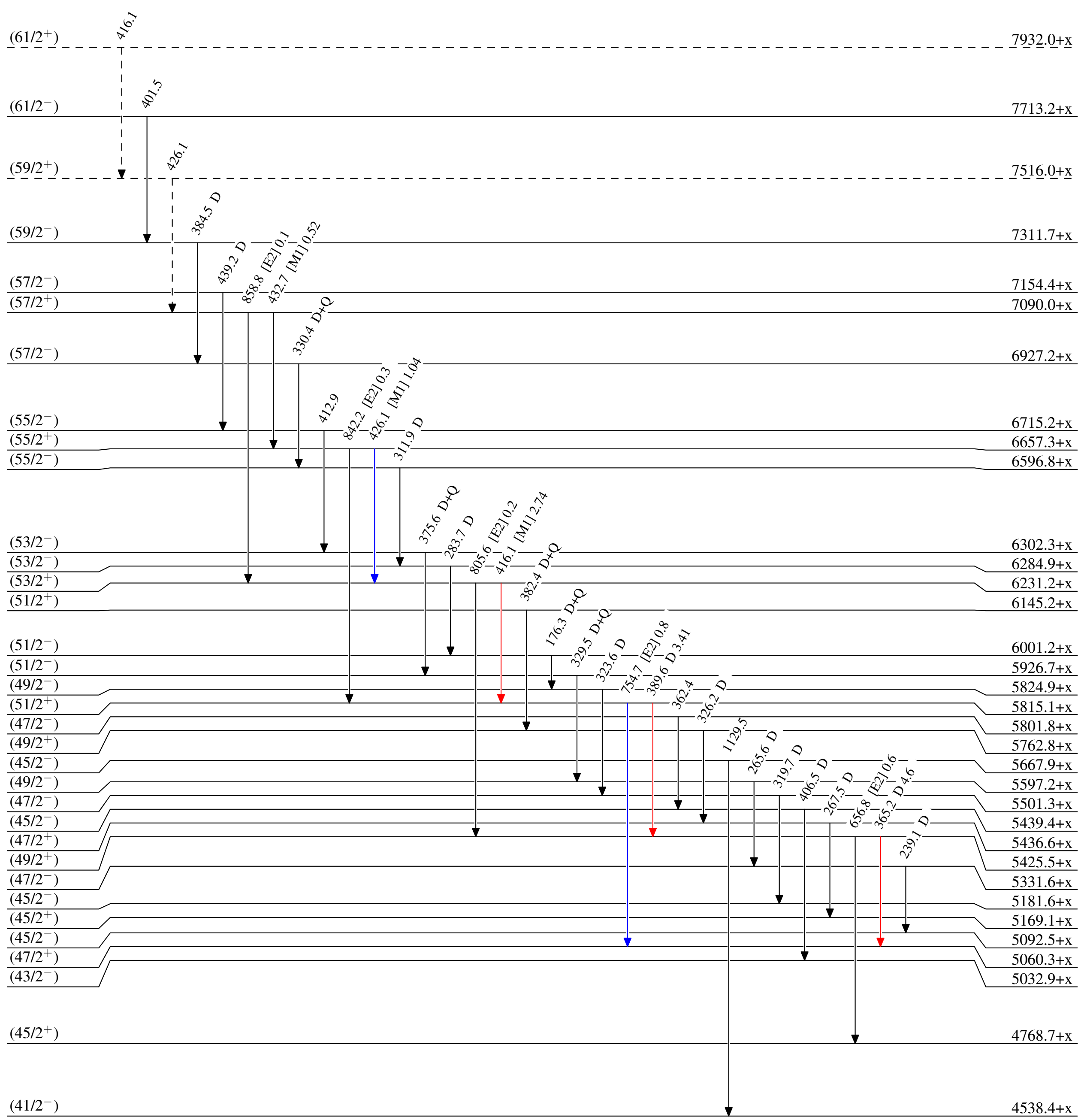
Legend

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

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

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

γ Decay (Uncertain)

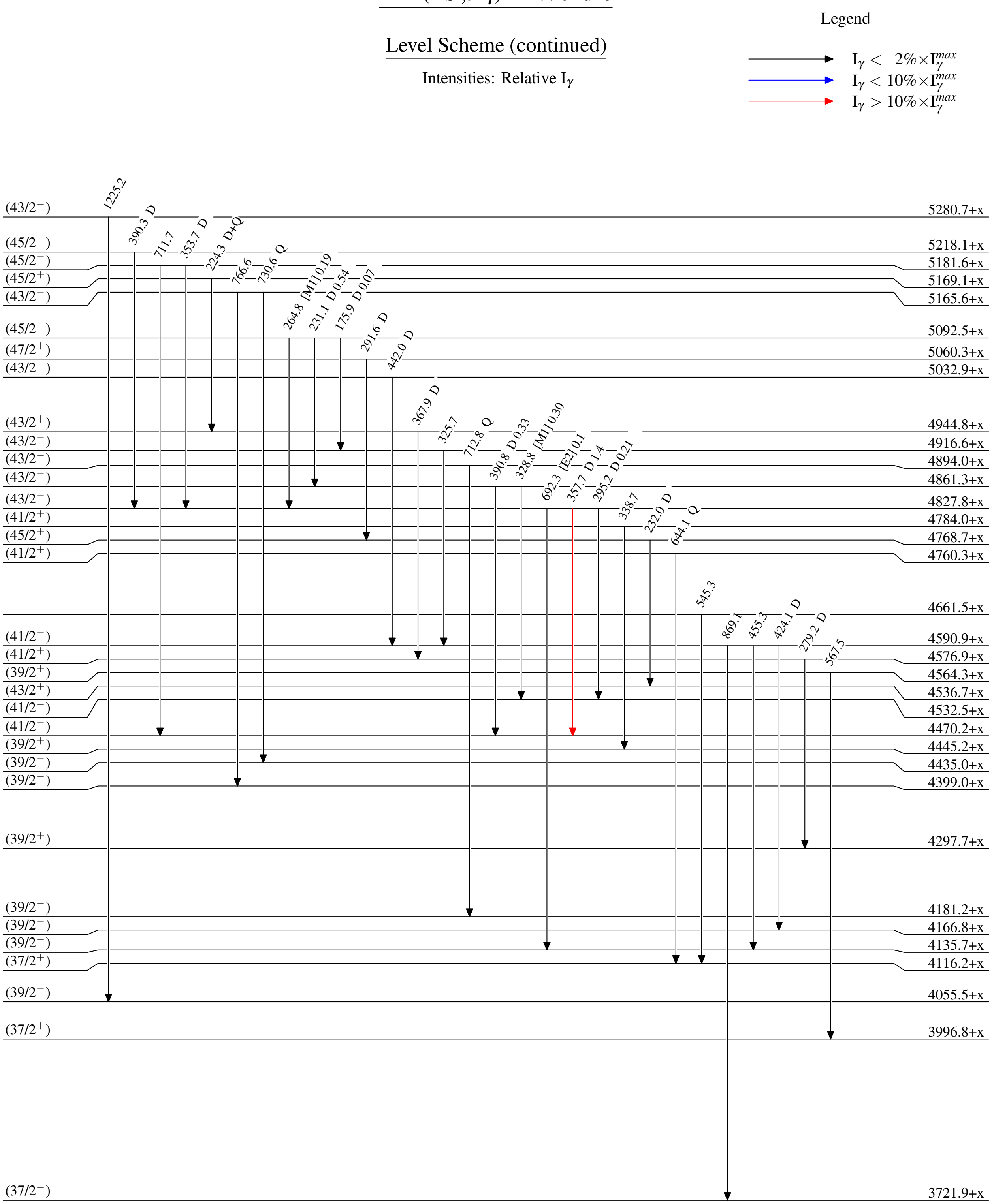


$^{193}_{82}Pb_{111}$

$^{168}Er(^{30}Si,5n\gamma)$ 1996Du18

Level Scheme (continued)

Intensities: Relative I_γ



$^{193}_{82}Pb_{111}$

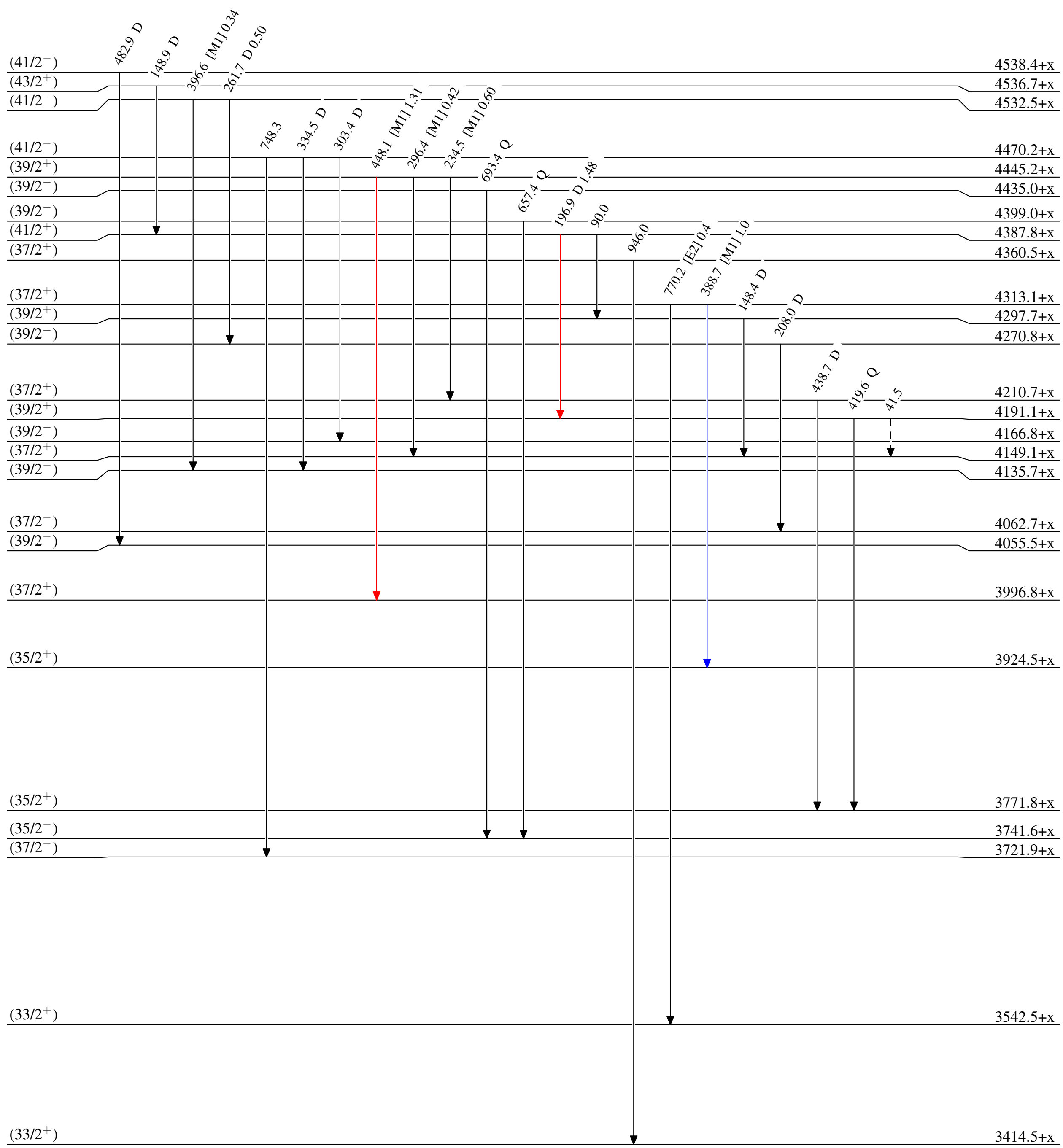
$^{168}Er(^{30}Si,5n\gamma)$ 1996Du18

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



$^{193}_{82}Pb_{111}$

$^{168}Er(^{30}Si,5n\gamma)$ 1996Du18

Level Scheme (continued)

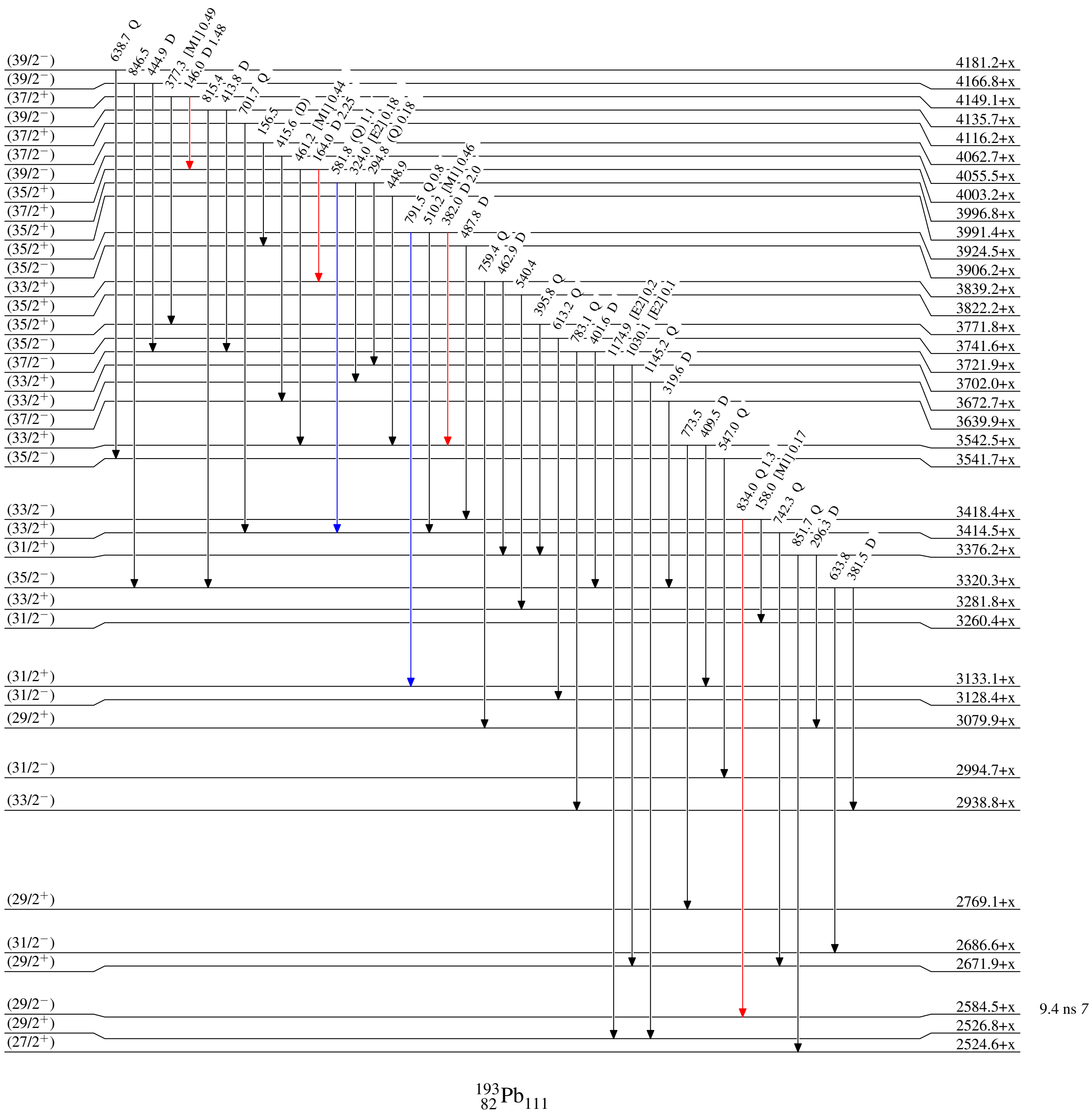
Intensities: Relative I_γ

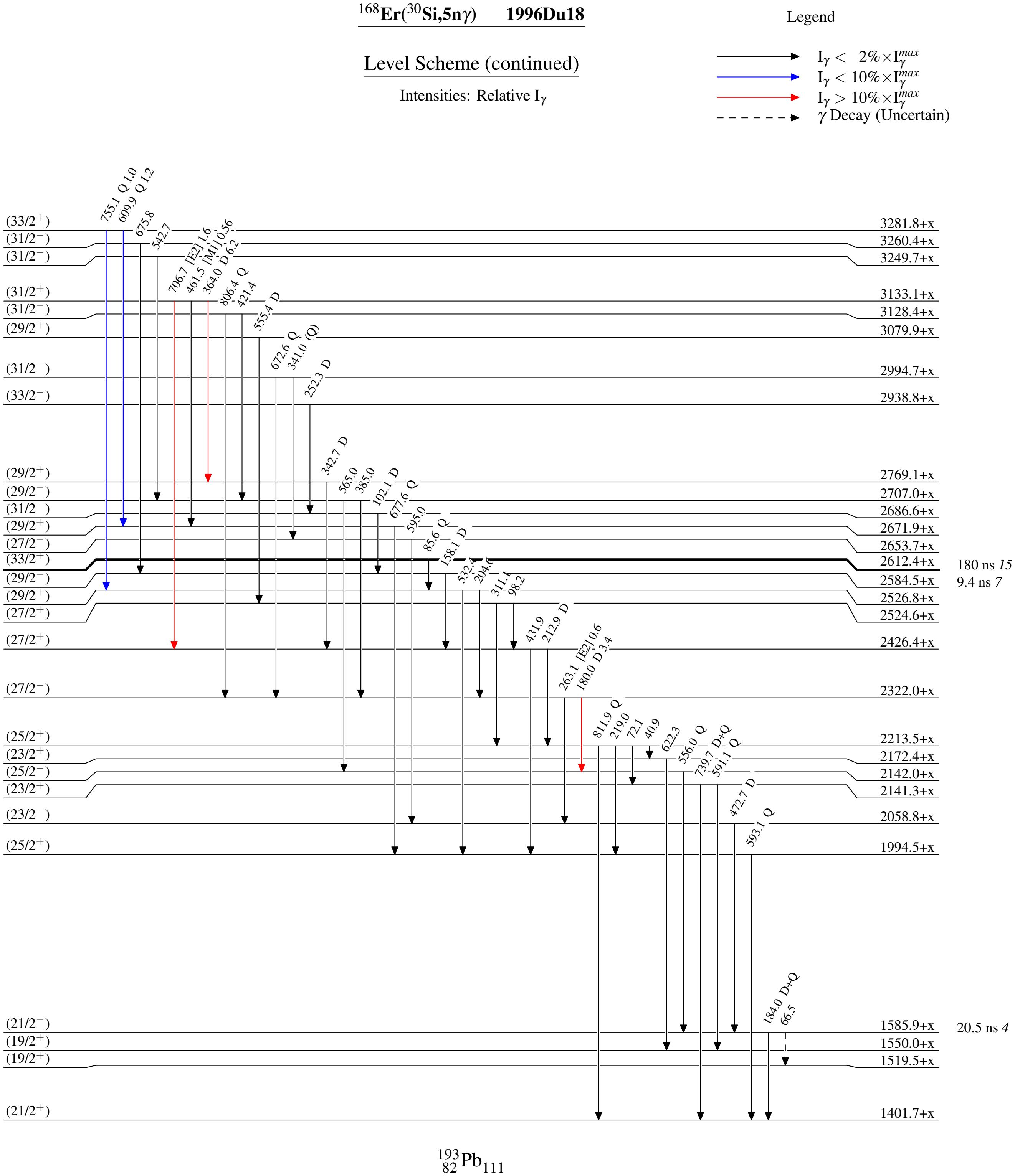
Legend

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

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

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

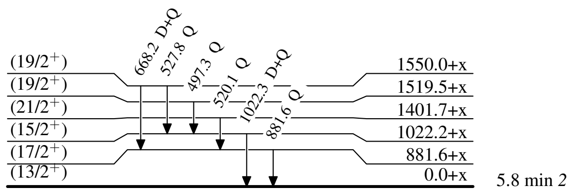



^{168}Er(^{30}Si,5nγ) 1996Du18
Level Scheme (continued)
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγ^max
Iγ < 10%×Iγ^max
Iγ > 10%×Iγ^max
γ Decay (Uncertain)
(33/2+) 3281.8+x
(31/2−) 3260.4+x
(31/2−) 3249.7+x
(31/2+) 3133.1+x
(31/2−) 3128.4+x
(29/2+) 3079.9+x
(31/2−) 2994.7+x
(33/2−) 2938.8+x
(29/2+) 2769.1+x
(29/2−) 2707.0+x
(31/2−) 2686.6+x
(29/2+) 2671.9+x
(27/2−) 2653.7+x
(33/2+) 2612.4+x 180 ns 15
(29/2−) 2584.5+x 9.4 ns 7
(29/2+) 2526.8+x
(27/2+) 2524.6+x
(27/2+) 2426.4+x
(27/2−) 2322.0+x
(25/2+) 2213.5+x
(23/2+) 2172.4+x
(25/2−) 2142.0+x
(23/2+) 2141.3+x
(23/2−) 2058.8+x
(25/2+) 1994.5+x
(21/2−) 1585.9+x 20.5 ns 4
(19/2+) 1550.0+x
(19/2+) 1519.5+x
(21/2+) 1401.7+x
755.1 Q 1.0
609.9 Q 1.2
675.8
542.7
706.7 [E2] 1.6
461.5 [M1] 0.56
364.0 D 6.2
806.4 Q
421.4
555.4 D
672.6 Q
341.0 (Q)
252.3 D
342.7 D
565.0
385.0
102.1 D
677.6 Q
595.0
85.6 Q
158.1 D
532.4
204.0
311.1
98.2
431.9
212.9 D
263.1 [E2] 0.6
180.0 D 3.4
811.9 Q
219.0
72.1
40.9
622.3
556.0 Q
739.7 D+Q
591.1 Q
472.7 D
593.1 Q
184.0 D+Q
66.5
$^{193}_{82}Pb_{111}$

^{168}Er(^{30}Si,5nγ) 1996Du18

Level Scheme (continued)

Intensities: Relative I_γ



$^{193}_{82}Pb_{111}$

$^{168}Er(^{30}Si,5n\gamma)$ 1996Du18