Adopted Levels, Gammas

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

Q(β^-)=−4.58×10^3 *7*; S(n)=9.47×10^3 *7*; S(p)=2.18×10^3 *7*; Q(α)=1.37×10^3 *12* 2012Wa38
Note: Current evaluation has used the following Q record −5030 syst 9450 syst 2360 syst 1310 syst 1995Au04.
Δ(Q(β^-))=585, Δ(S(n))=Δ(Q(α))=422, Δ(S(p))=363 (1995Au04).
Q(εp)=2690 *302* (syst,1995Au04).

^{130}Pr Levels

Band assignments are primarily taken from 1998SmZX. Selected bands are also given by 1998Sm08, 1998Pe05 and 1999Ko21.

Cross Reference (XREF) Flags

A	^{94}Mo(^{40}Ca,3pnγ)	D	^{110}Cd(^{28}Si,αp3nγ)
B	^{104}Pd(^{32}S,αpnγ)	E	^{130}Nd ε decay (13 s)
C	^{105}Pd(^{35}Cl,2n2$\alpha\gamma$)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0+x[@]	(5$^+$)	40.0 s *4*	ABC	%ε+%β^+=100 T$_{1/2}$: from 1988Ba42. Others: 44 s *4* (1987Ko24,1990Ko25), 28 s *6* (1977Bo02). This half−life is arbitrarily assigned to 0+x level, but it could also be for 0+y level or for combined isomers (high-spin and low-spin) predicted in ^{130}Pr.
0+y[@]	(4,5$^+$)		E	J$^\pi$: γ cascade from (1$^+$)-(2,3$^+$); no γ from (1$^+$). T$_{1/2}$: see comment for 0+x level.
0+z?				%ε+%β^+=? T$_{1/2}$: see comment for 0+x. J$^\pi$: a low-spin isomer of J^π=2$^+$ is predicted from systematics (1997Au04).
58+x[a]	(6$^-$)		AB	
62+x	(6$^+$)		ABC	
92.2+y *2*	(2,3$^+$)		E	J$^\pi$: γ from (1$^+$); no evidence of ε feeding from 0$^+$.
138.9+x[b] *5*	(7$^-$)		AB D	
140.5+y *2*	(2,3$^+$)		E	J$^\pi$: γ from (1$^+$); no evidence of ε feeding from 0$^+$.
142.9+x *5*	(7$^+$)		AB	
164.2+y *3*	(1$^+$)[#]		E	
188.7+y *3*	(1$^+$)[#]		E	
194.0+x *5*	(7$^+$)		AB	
197.1+y *3*	(1$^+$)[#]		E	
239.8+x *5*			A C	
245.4+y *3*	(1$^+$)[#]		E	
246.4+x[d] *5*	(7$^+$)		ABCD	
260.8+y *2*	(1$^+$)[#]		E	
262.1+y *3*	(1$^+$)[#]		E	
262.5+x[a] *5*	(8$^-$)		AB D	
301.0+y *3*	(1$^+$)[#]		E	
336.1+x[c] *5*	(8$^+$)		ABCD	
365.6+x[i] *5*	(7$^-$)		A	
382.6+x *5*	(7$^-$)		A	
384.9+x *5*	(6$^+$)		A C	
422.0+y *2*	(1$^+$)[#]		E	

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Adopted Levels, Gammas (continued)

^{130}Pr Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
432.7+y 3	(1+)#	E	2772.8+x[j] 7	(15−)	A	6113.0+x[a] 9	(24−)	A
434.4+x[b] 5	(9−)	AB D	2798.9+x[d] 7	(17+)	AB	6181.7+x[e] 9	(24−)	A C
442.0+y 4	(1+)#	E	2857.3+x[e] 7	(16−)	A C	6217.3+x[j] 9	(23−)	A
446.2+x[d] 5	(9+)	ABCD	2900.6+x[h] 7	(16+)	A C	6341.1+x[h] 9	(24+)	A C
517.6+x[g] 5	(7+)	A C	2962.1+x[b] 7	(17−)	AB D	6511.4+x[d] 9	(25+)	AB
532.2+x 5	(7+)	A C	2962.5+x[g] 7	(17+)	A C	6540.4+x[g] 9	(25+)	A C
577.5+x[c] 5	(10+)	ABCD	3117.3+x[k] 7	(16−)	A	6674.4+x[f] 9	(25−)	A C
600.9+x[h] 5	(6+)	A C	3213.6+x[f] 7	(17−)	A C	6676.3+x[b] 9	(25−)	A
641.9+x[a] 5	(10−)	AB D	3219.2+x[c] 7	(18+)	AB	6724.4+x[k] 9	(24−)	A
694.3+x[i] 5	(9−)	A	3350.3+x[a] 7	(18−)	AB	7077.1+x[i] 10	(25−)	A
706.9+x[e] 5	(8−)	A C	3350.9+x[i] 7	(17−)	A	7163.1+x[c] 10	(26+)	AB
770.1+x[g] 5	(9+)	A C	3503.2+x[j] 8	(17−)	A	7177.7+x[e] 10	(26−)	A C
803.5+x[d] 5	(11+)	ABCD	3585.0+x[e] 8	(18−)	A C	7251.2+x[a] 10	(26−)	A
865.5+x[h] 5	(8+)	A C	3648.1+x[d] 8	(19+)	AB	7381.5+x[h] 10	(26+)	A C
884.8+x[f] 5	(9−)	A C	3650.4+x[h] 8	(18+)	A C	7628.1+x[d] 10	(27+)	AB
893.2+x[b] 5	(11−)	AB D	3739.5+x[g] 8	(19+)	A C	7670.5+x[g] 10	(27+)	A C
1016.9+x[c] 5	(12+)	AB D	3759.9+x[b] 8	(19−)	AB	7706.1+x[f] 10	(27−)	A C
1103.0+x[e] 6	(10−)	A C	3915.5+x[k] 8	(18−)	A	7867.8+x[b] 10	(27−)	A
1143.9+x[g] 6	(11+)	A C	3978.8+x[f] 8	(19−)	A C	8145.3+x[i] 10	(27−)	A
1171.6+x[a] 6	(12−)	AB D	4109.6+x[c] 8	(20+)	AB	8240.6+x[e] 10	(28−)	A C
1186.9+x[i] 6	(11−)	A	4168.7+x[a] 8	(20−)	A	8372.1+x[c] 10	(28+)	AB
1229.8+x[h] 6	(10+)	A C	4186.4+x[i] 8	(19−)	A	8509.2+x[a] 10	(28−)	A
1338.0+x[d] 6	(13+)	AB D	4349.4+x[j] 8	(19−)	A	8509.4+x[h] 10	(28+)	A C
1347.1+x[f] 6	(11−)	A C	4382.5+x[e] 8	(20−)	A C	8802.2+x[f] 10	(29−)	A C
1489.5+x[b] 6	(13−)	AB D	4479.8+x[h] 8	(20+)	A C	8846.7+x[d] 10	(29+)	A
1612.1+x[e] 6	(12−)	A C	4539.3+x[d] 8	(21+)	AB	8890.6+x[g] 10	(29+)	A C
1628.6+x[c] 6	(14+)	AB D	4584.3+x[g] 8	(21+)	A C	9160.1+x[b] 10	(29−)	A
1644.6+x[g] 6	(13+)	A C	4620.5+x[&b] 8	(21−)	AB	9275.0+x[i] 10	(29−)	A
1685.7+x[h] 6	(12+)	A C	4802.5+x[k] 8	(20−)	A	9370.7+x[e] 10	(30−)	A C
1819.1+x[i] 6	(13−)	A	4811.8+x[f] 8	(21−)	A C	9656.6+x[c] 10	(30+)	A
1824.4+x[a] 6	(14−)	AB D	5045.0+x[c] 8	(22+)	AB	9730.3+x[h] 10	(30+)	A C
1896.1+x[f] 6	(13−)	A C	5074.6+x[i] 8	(21−)	A	9846.2+x[a] 10	(30−)	A
2015.3+x[d] 6	(15+)	AB D	5082.0+x[a] 8	(22−)	A	9966.0+x[f] 10	(31−)	A C
2192.9+x[b] 7	(15−)	AB D	5249.8+x[e] 8	(22−)	A C	10156.6+x[d] 10	(31+)	A
2198.0+x[e] 7	(14−)	A C	5260.4+x[j] 8	(21−)	A	10188.7+x[g] 10	(31+)	A C
2217.1+x[j] 7	(13−)	A	5377.4+x[h] 8	(22+)	A C	10526.3+x[b] 10	(31−)	A
2242.9+x[h] 7	(14+)	A C	5487.9+x[d] 8	(23+)	AB	10569.1+x[e] 10	(32−)	A C
2258.0+x[g] 7	(15+)	A C	5511.0+x[g] 8	(23+)	A C	11048.6+x[h] 10	(32+)	A C
2376.8+x[c] 7	(16+)	AB D	5591.0+x[b] 8	(23−)	A	11204.3+x[f] 10	(33−)	A
2471.4+x[k] 7	(14−)	A	5711.5+x[f] 8	(23−)	A C	11562.9+x[g] 10	(33+)	A C
2519.8+x[f] 7	(15−)	A C	5728.1+x[k] 9	(22−)	A	11836.1+x[e] 10	(34−)	A C
2552.7+x[i] 7	(15−)	A	6041.2+x[i] 9	(23−)	A	12411.4+x[h] 10	(34+)	A C
2566.1+x[a]	(16−)	AB	6055.5+x[c] 9	(24+)	AB			

† From least-squares fit to Eγ's. It is assumed that 58γ from (6−) level and 62γ from (6+) level feed the same level, as proposed by 1998Pe05 in (^{32}S,αpnγ). There is however, no experimental confirmation to justify the placement of these two γ rays to a

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Adopted Levels, Gammas (continued)

^{130}Pr Levels (continued)

common final level.

‡ From $\gamma\gamma(\theta)$(DCO), γ decay pattern and band structures. Values are generally from (^{40}Ca,3pnγ) for high-spin levels.

Possible allowed ε, β^+ feeding from 0^+.

@ It is possible that 0+y in ^{130}Nd ε decay and 0+x in high−spin states correspond to the same level. However, at this stage there are no data available to locate the position of g.s. of ^{130}Pr.

& This level corresponds to 4210+x in (^{32}S,αpnγ) due to different placement of 452γ and 861γ in that reaction.

[a] Band(A): π3/2[541]ν5/2[402], α=0. $\pi h_{11/2}\nu(g_{7/2}d_{5/2})$ (1998SmZX,1998Pe05). Q(intrinsic)=3.4 *2* (1998Ko34).

[b] Band(a): π3/2[541]ν5/2[402], α=1. $\pi h_{11/2}\nu(g_{7/2}d_{5/2})$ (1998SmZX,1998Pe05). See also comments for its signature partner.

[c] Band(B): π3/2[541]ν7/2[523], α=0. $\pi h_{11/2}\nu h_{11/2}$ (1998SmZX,1998Pe05).

[d] Band(b): π3/2[541]ν7/2[523], α=1. $\pi h_{11/2}\nu h_{11/2}$ (1998SmZX,1998Pe05).

[e] Band(C): π9/2[404]ν7/2[523], α=0. $\pi g_{9/2}\nu h_{11/2}$ shell model states. Highly-deformed band with large dynamic moment of inertia and Q(intrinsic)=6.1 *5*, β_2=0.35 *3* (1998Ko34). This band and its signature partner form strongly-coupled bands (1997Br17).

[f] Band(c): π9/2[404]ν7/2[523], α=1. $\pi g_{9/2}\nu h_{11/2}$ shell model states. See also comments for its signature partner.

[g] Band(D): π3/2[541]ν1/2[541], α=1 $\pi h_{11/2}\nu(f_{7/2}h_{9/2})$ shell model states. Q(intrinsic)=4.3 *3* (quoted by 1998SmZX from a priv comm from Kondev et al (authors of 1998Ko34)).

[h] Band(d): π3/2[541]ν1/2[541], α=0 $\pi h_{11/2}\nu(f_{7/2}h_{9/2})$ shell model states. Q(intrinsic)=4.5 *3* (quoted by 1998SmZX from a priv comm from Kondev et al (authors of 1998Ko34)).

[i] Band(E): π3/2[541]ν1/2[541], α=1. $\pi h_{11/2}\nu d_{3/2}$ shell model states.

[j] Band(F): π11/2[505]ν7/2[523], α=1. $\pi h_{11/2}\nu h_{11/2}$ shell model states.

[k] Band(f): π11/2[505]ν7/2[523], α=0. $\pi h_{11/2}\nu h_{11/2}$ shell model states.

γ(^{130}Pr)

Multipolarities are not given explicitly here, but suggested from $\gamma\gamma(\theta)$(DCO) data in (^{40}Ca,3pnγ) and in (^{35}Cl,2n2ag) reactions. In these data, listed R(DCO)≈1 suggests ΔJ=2, stretched quadrupole and R(DCO)≈0.5 suggests ΔJ=1 dipole.

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
58+x	(6$^-$)	58		0+x	(5$^+$)
62+x	(6$^+$)	62		0+x	(5$^+$)
92.2+y	(2,3$^+$)	92.2 *2*	100	0+y	(4,5$^+$)
138.9+x	(7$^-$)	80.8 *3*	100	58+x	(6$^-$)
140.5+y	(2,3$^+$)	48.5 *2*	21 *4*	92.2+y	(2,3$^+$)
		140.5 *2*	100 *11*	0+y	(4,5$^+$)
164.2+y	(1$^+$)	72.1 *2*	100	92.2+y	(2,3$^+$)
188.7+y	(1$^+$)	96.6 *2*	100	92.2+y	(2,3$^+$)
197.1+y	(1$^+$)	56.5 *2*	100	140.5+y	(2,3$^+$)
239.8+x		178.1[c] *3*	100	62+x	(6$^+$)
245.4+y	(1$^+$)	104.8 *2*	100	140.5+y	(2,3$^+$)
246.4+x	(7$^+$)	184.4 *3*	100	62+x	(6$^+$)
260.8+y	(1$^+$)	120.3 *2*	100	140.5+y	(2,3$^+$)
262.1+y	(1$^+$)	121.5 *2*	100	140.5+y	(2,3$^+$)
262.5+x	(8$^-$)	123.5 *3*	100 *15*	138.9+x	(7$^-$)
		204.5 *3*	12.2 *17*	58+x	(6$^-$)
301.0+y	(1$^+$)	208.9 *2*	100	92.2+y	(2,3$^+$)
336.1+x	(8$^+$)	89.7 *3*	100 *4*	246.4+x	(7$^+$)
		142.1 *3*	19.6 *10*	194.0+x	(7$^+$)
		193.2 *3*	23.9 *11*	142.9+x	(7$^+$)
		274.1 *3*	24.8 *12*	62+x	(6$^+$)
365.6+x	(7$^-$)	103.1 *3*	40 *10*	262.5+x	(8$^-$)
		226.6 *3*	100 *23*	138.9+x	(7$^-$)
		307.6 *3*	47 *13*	58+x	(6$^-$)

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Adopted Levels, Gammas (continued)

γ(^{130}Pr) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
382.6+x	(7⁻)	243.7 *3*	100	138.9+x	(7⁻)
384.9+x	(6⁺)	145		239.8+x	
422.0+y	(1⁺)	161.2 *2*	100 *10*	260.8+y	(1⁺)
		329.8 *2*	74 *6*	92.2+y	(2,3⁺)
432.7+y	(1⁺)	340.6 *2*	100	92.2+y	(2,3⁺)
434.4+x	(9⁻)	172.0 *3*	100 *3*	262.5+x	(8⁻)
		295.5 *3*	23.1 *10*	138.9+x	(7⁻)
442.0+y	(1⁺)	196.6 *2*	100	245.4+y	(1⁺)
446.2+x	(9⁺)	110.1 *3*	100	336.1+x	(8⁺)
517.6+x	(7⁺)	181.3 *3*	100 *8*	336.1+x	(8⁺)
		277.8 *3*	34 *5*	239.8+x	
		455.6[c] *3*	<6	62+x	(6⁺)
532.2+x	(7⁺)	196.3 *3*	100 *9*	336.1+x	(8⁺)
		292.5 *3*	21 *3*	239.8+x	
577.5+x	(10⁺)	131.2 *3*	100 *4*	446.2+x	(9⁺)
		241.3 *3*	12.4 *6*	336.1+x	(8⁺)
600.9+x	(6⁺)	69		532.2+x	(7⁺)
		83		517.6+x	(7⁺)
		215.9 *3*	100 *28*	384.9+x	(6⁺)
641.9+x	(10⁻)	207.5 *3*	100 *3*	434.4+x	(9⁻)
		379.4 *3*	45.0‡ *16*	262.5+x	(8⁻)
694.3+x	(9⁻)	311.7 *3*	32.0 *20*	382.6+x	(7⁻)
		328.7 *3*	100 *6*	365.6+x	(7⁻)
		431.8 *3*	25 *3*	262.5+x	(8⁻)
706.9+x	(8⁻)	370.8 *3*	92 *26*	336.1+x	(8⁺)
		460.5 *3*	100 *29*	246.4+x	(7⁺)
770.1+x	(9⁺)	192.3 *3*	40 *2*	577.5+x	(10⁺)
		237.9 *3*	40 *2*	532.2+x	(7⁺)
		252.4 *3*	42 *3*	517.6+x	(7⁺)
		434.2 *3*	100# *5*	336.1+x	(8⁺)
803.5+x	(11⁺)	226.0 *3*	100 *3*	577.5+x	(10⁺)
		357.3 *3*	24.2 *9*	446.2+x	(9⁺)
865.5+x	(8⁺)	264.5 *3*	100 *9*	600.9+x	(6⁺)
		333.3 *3*	68@ *7*	532.2+x	(7⁺)
		347.9 *3*	39 *4*	517.6+x	(7⁺)
884.8+x	(9⁻)	177.9 *3*	100	706.9+x	(8⁻)
893.2+x	(11⁻)	251.3 *3*	100 *3*	641.9+x	(10⁻)
		458.8 *3*	73 *3*	434.4+x	(9⁻)
1016.9+x	(12⁺)	213.4 *3*	100 *3*	803.5+x	(11⁺)
		439.4 *3*	65.0 *24*	577.5+x	(10⁺)
1103.0+x	(10⁻)	218.2 *3*	100	884.8+x	(9⁻)
1143.9+x	(11⁺)	373.8 *3*	100 *4*	770.1+x	(9⁺)
		566.4 *3*	23.9 *12*	577.5+x	(10⁺)
1171.6+x	(12⁻)	278.4 *3*	80 *3*	893.2+x	(11⁻)
		529.7 *3*	100 *3*	641.9+x	(10⁻)
1186.9+x	(11⁻)	492.6 *3*	100	694.3+x	(9⁻)
1229.8+x	(10⁺)	364.3 *3*	100	865.5+x	(8⁺)
1338.0+x	(13⁺)	321.1 *3*	100 *3*	1016.9+x	(12⁺)
		534.5 *3*	59.2 *20*	803.5+x	(11⁺)
1347.1+x	(11⁻)	244.1 *3*	100 *5*	1103.0+x	(10⁻)
		462.3 *3*	54 *5*	884.8+x	(9⁻)
1489.5+x	(13⁻)	317.9 *3*	60.0 *20*	1171.6+x	(12⁻)
		596.3 *3*	100 *3*	893.2+x	(11⁻)
1612.1+x	(12⁻)	265.0 *3*	56 *4*	1347.1+x	(11⁻)
		509.1 *3*	100 *5*	1103.0+x	(10⁻)

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Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
1628.6+x	(14$^+$)	290.6 *3*	47.4& *16*	1338.0+x	(13$^+$)
		611.7 *3*	100 *3*	1016.9+x	(12$^+$)
1644.6+x	(13$^+$)	500.7 *3*	100	1143.9+x	(11$^+$)
1685.7+x	(12$^+$)	455.9 *3*	100	1229.8+x	(10$^+$)
1819.1+x	(13$^-$)	632.2 *3*	100	1186.9+x	(11$^-$)
1824.4+x	(14$^-$)	335.0 *3*	47.0 *15*	1489.5+x	(13$^-$)
		652.8 *3*	100 *3*	1171.6+x	(12$^-$)
1896.1+x	(13$^-$)	283.9 *3*	37 *3*	1612.1+x	(12$^-$)
		548.9 *3*	100 *6*	1347.1+x	(11$^-$)
2015.3+x	(15$^+$)	386.7 *3*	80 *3*	1628.6+x	(14$^+$)
		677.3 *3*	100 *3*	1338.0+x	(13$^+$)
2192.9+x	(15$^-$)	368.4 *3*	41.6 *15*	1824.4+x	(14$^-$)
		703.4 *3*	100 *3*	1489.5+x	(13$^-$)
2198.0+x	(14$^-$)	302.1 *3*	35 *4*	1896.1+x	(13$^-$)
		586.1 *3*	100 *6*	1612.1+x	(12$^-$)
2217.1+x	(13$^-$)	879.1 *3*	100	1338.0+x	(13$^+$)
2242.9+x	(14$^+$)	557.2 *3*	100	1685.7+x	(12$^+$)
2258.0+x	(15$^+$)	613.3 *3*	100	1644.6+x	(13$^+$)
2376.8+x	(16$^+$)	361.5 *3*	40.5 *15*	2015.3+x	(15$^+$)
		748.2 *3*	100 *3*	1628.6+x	(14$^+$)
2471.4+x	(14$^-$)	254.3 *3*	100 *5*	2217.1+x	(13$^-$)
		1133.4 *3*	59 *4*	1338.0+x	(13$^+$)
2519.8+x	(15$^-$)	321.3 *3*	42 *4*	2198.0+x	(14$^-$)
		623.4 *3*	100 *5*	1896.1+x	(13$^-$)
2552.7+x	(15$^-$)	733.6 *3*	100	1819.1+x	(13$^-$)
2566.1+x	(16$^-$)	373.2 *3*	34.7 *14*	2192.9+x	(15$^-$)
		741.7 *3*	100 *3*	1824.4+x	(14$^-$)
2772.8+x	(15$^-$)	301.4 *3*	100	2471.4+x	(14$^-$)
2798.9+x	(17$^+$)	422.1 *3*	51.9 *20*	2376.8+x	(16$^+$)
		783.6 *3*	100 *3*	2015.3+x	(15$^+$)
2857.3+x	(16$^-$)	336.0 *3*	45 *4*	2519.8+x	(15$^-$)
		660.2 *3*	100 *6*	2198.0+x	(14$^-$)
2900.6+x	(16$^+$)	657.7 *3*	100	2242.9+x	(14$^+$)
2962.1+x	(17$^-$)	396.0 *3*	43.3 *16*	2566.1+x	(16$^-$)
		769.2 *3*	100 *3*	2192.9+x	(15$^-$)
2962.5+x	(17$^+$)	704.5 *3*	100	2258.0+x	(15$^+$)
3117.3+x	(16$^-$)	344.5 *3*	100	2772.8+x	(15$^-$)
3213.6+x	(17$^-$)	355.6 *3*	29 *3*	2857.3+x	(16$^-$)
		694.5 *3*	100 *5*	2519.8+x	(15$^-$)
3219.2+x	(18$^+$)	420.3 *3*	38.2 *16*	2798.9+x	(17$^+$)
		842.4 *3*	100 *3*	2376.8+x	(16$^+$)
3350.3+x	(18$^-$)	388.2 *3*	37.8 *15*	2962.1+x	(17$^-$)
		784.2 *3*	100 *4*	2566.1+x	(16$^-$)
3350.9+x	(17$^-$)	798.2 *3*	100	2552.7+x	(15$^-$)
3503.2+x	(17$^-$)	385.9 *3*	73 *4*	3117.3+x	(16$^-$)
		730.4 *3*	100 *6*	2772.8+x	(15$^-$)
3585.0+x	(18$^-$)	727.7 *3*	100	2857.3+x	(16$^-$)
3648.1+x	(19$^+$)	428.9 *3*	59.2 *25*	3219.2+x	(18$^+$)
		849.2 *3*	100 *3*	2798.9+x	(17$^+$)
3650.4+x	(18$^+$)	749.8 *3*	100	2900.6+x	(16$^+$)
3739.5+x	(19$^+$)	777.0 *3*	100	2962.5+x	(17$^+$)
3759.9+x	(19$^-$)	409.6 *3*	37.9 *17*	3350.3+x	(18$^-$)
		797.8 *3*	100 *4*	2962.1+x	(17$^-$)
3915.5+x	(18$^-$)	412.3 *3*	100 *6*	3503.2+x	(17$^-$)
		798.1 *3*	58 *5*	3117.3+x	(16$^-$)

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Adopted Levels, Gammas (continued)

γ(^{130}Pr) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
3978.8+x	(19⁻)	765.2 *3*	100	3213.6+x	(17⁻)
4109.6+x	(20⁺)	461.5 *3*	61 *3*	3648.1+x	(19⁺)
		890.4 *3*	100 *6*	3219.2+x	(18⁺)
4168.7+x	(20⁻)	408.8 *3*	32.4 *19*	3759.9+x	(19⁻)
		818.4 *3*	100 *4*	3350.3+x	(18⁻)
4186.4+x	(19⁻)	835.5 *3*	100	3350.9+x	(17⁻)
4349.4+x	(19⁻)	433.9 *3*	97 *6*	3915.5+x	(18⁻)
		846.2 *3*	100 *7*	3503.2+x	(17⁻)
4382.5+x	(20⁻)	797.5 *3*	100	3585.0+x	(18⁻)
4479.8+x	(20⁺)	829.4 *3*	100	3650.4+x	(18⁺)
4539.3+x	(21⁺)	429.7 *3*	5.1 *15*	4109.6+x	(20⁺)
		891.3 *3*	100 *4*	3648.1+x	(19⁺)
4584.3+x	(21⁺)	844.8 *3*	100	3739.5+x	(19⁺)
4620.5+x	(21⁻)	451.8 *3*	34.9 *18*	4168.7+x	(20⁻)
		860.6 *3*	100 *4*	3759.9+x	(19⁻)
4802.5+x	(20⁻)	453.1 *3*	100 *5*	4349.4+x	(19⁻)
		887.0 *3*	97 *5*	3915.5+x	(18⁻)
4811.8+x	(21⁻)	833.0 *3*	100	3978.8+x	(19⁻)
5045.0+x	(22⁺)	505.6 *3*	51.7 *21*	4539.3+x	(21⁺)
		935.4 *3*	100 *4*	4109.6+x	(20⁺)
5074.6+x	(21⁻)	888.2 *3*	100	4186.4+x	(19⁻)
5082.0+x	(22⁻)	461.5 *3*	44.6 *23*	4620.5+x	(21⁻)
		913.3 *3*	100 *4*	4168.7+x	(20⁻)
5249.8+x	(22⁻)	867.2 *3*	100	4382.5+x	(20⁻)
5260.4+x	(21⁻)	458.0 *3*	100 *5*	4802.5+x	(20⁻)
		911.0 *3*	62 *4*	4349.4+x	(19⁻)
5377.4+x	(22⁺)	897.6 *3*	100	4479.8+x	(20⁺)
5487.9+x	(23⁺)	443.0 *3*	60 *3*	5045.0+x	(22⁺)
		903.6 *3*	36.9 *17*	4584.3+x	(21⁺)
		948.6 *3*	100 *4*	4539.3+x	(21⁺)
5511.0+x	(23⁺)	926.7 *3*	100	4584.3+x	(21⁺)
5591.0+x	(23⁻)	509.0 *3*	53 *3*	5082.0+x	(22⁻)
		970.5 *3*	100 *4*	4620.5+x	(21⁻)
5711.5+x	(23⁻)	899.7 *3*	100	4811.8+x	(21⁻)
5728.1+x	(22⁻)	467.7 *3*	100 *4*	5260.4+x	(21⁻)
		925.7 *3*	40 *3*	4802.5+x	(20⁻)
6041.2+x	(23⁻)	966.6 *3*	100	5074.6+x	(21⁻)
6055.5+x	(24⁺)	567.5 *3*	65 *3*	5487.9+x	(23⁺)
		1010.5 *3*	100 *4*	5045.0+x	(22⁺)
6113.0+x	(24⁻)	521.9 *3*	56 *3*	5591.0+x	(23⁻)
		1031.0 *3*	100 *4*	5082.0+x	(22⁻)
6181.7+x	(24⁻)	931.9 *3*	100	5249.8+x	(22⁻)
6217.3+x	(23⁻)	489.2 *3*	79 *4*	5728.1+x	(22⁻)
		956.9 *3*	100 *5*	5260.4+x	(21⁻)
6341.1+x	(24⁺)	963.7 *3*	100	5377.4+x	(22⁺)
6511.4+x	(25⁺)	455.9 *3*	67 *3*	6055.5+x	(24⁺)
		1000.3 *3*	31.7 *16*	5511.0+x	(23⁺)
		1023.4 *3*	100 *4*	5487.9+x	(23⁺)
6540.4+x	(25⁺)	1029.4 *3*	100	5511.0+x	(23⁺)
6674.4+x	(25⁻)	962.9 *3*	100	5711.5+x	(23⁻)
6676.3+x	(25⁻)	1085.3 *3*	100	5591.0+x	(23⁻)
6724.4+x	(24⁻)	507.1 *3*	82 *5*	6217.3+x	(23⁻)
		996.2 *3*	100 *6*	5728.1+x	(22⁻)
7077.1+x	(25⁻)	1035.9 *3*	100	6041.2+x	(23⁻)
7163.1+x	(26⁺)	1107.6 *3*	100	6055.5+x	(24⁺)

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{130}Pr) (continued)

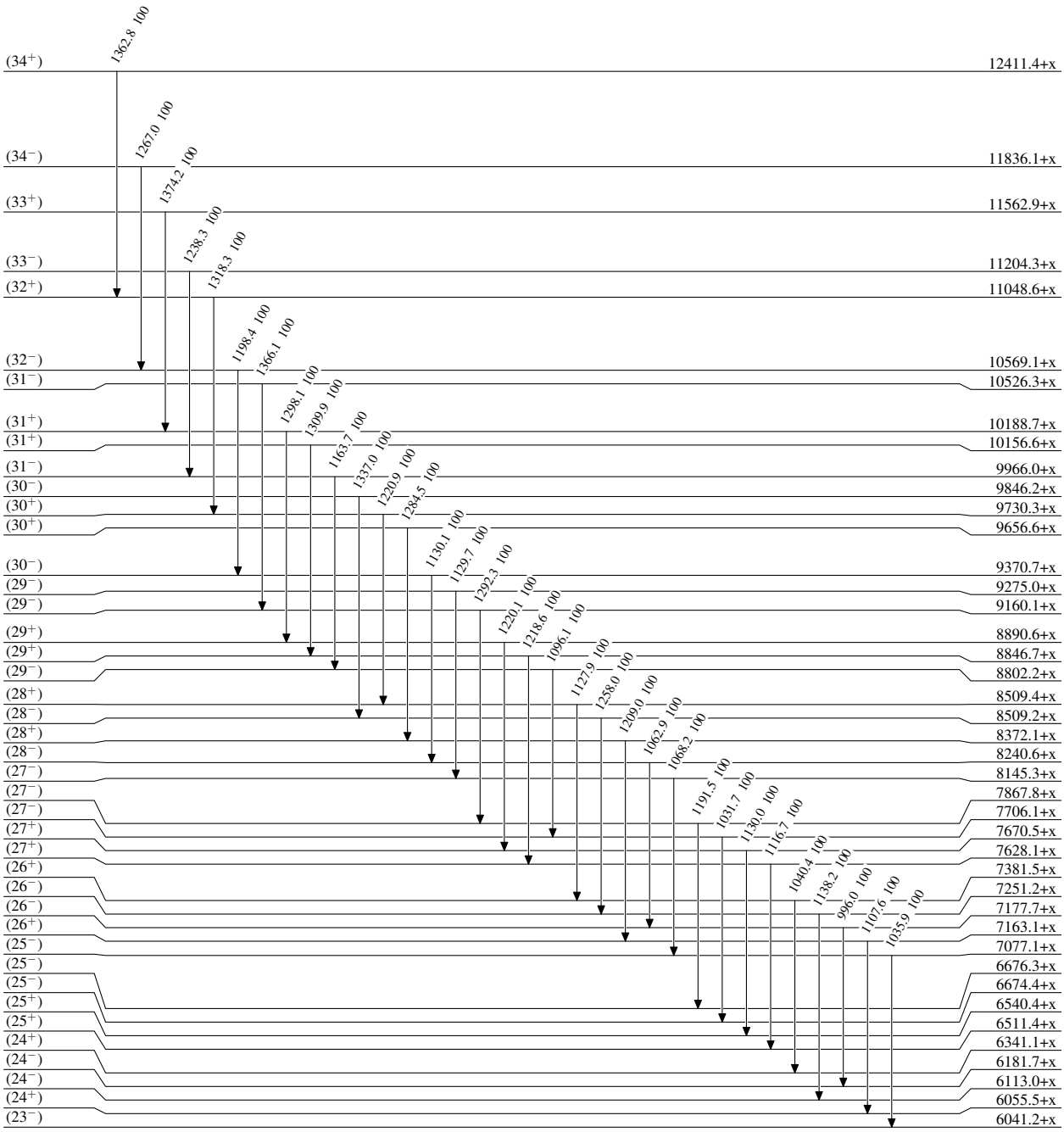
E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
7177.7+x	(26$^-$)	996.0 *3*	100	6181.7+x	(24$^-$)
7251.2+x	(26$^-$)	1138.2 *3*	100	6113.0+x	(24$^-$)
7381.5+x	(26$^+$)	1040.4 *3*	100	6341.1+x	(24$^+$)
7628.1+x	(27$^+$)	1116.7[a] *3*	100	6511.4+x	(25$^+$)
7670.5+x	(27$^+$)	1130.0 *3*	100	6540.4+x	(25$^+$)
7706.1+x	(27$^-$)	1031.7 *3*	100	6674.4+x	(25$^-$)
7867.8+x	(27$^-$)	1191.5 *3*	100	6676.3+x	(25$^-$)
8145.3+x	(27$^-$)	1068.2 *3*	100	7077.1+x	(25$^-$)
8240.6+x	(28$^-$)	1062.9 *3*	100	7177.7+x	(26$^-$)
8372.1+x	(28$^+$)	1209.0 *3*	100	7163.1+x	(26$^+$)
8509.2+x	(28$^-$)	1258.0 *3*	100	7251.2+x	(26$^-$)
8509.4+x	(28$^+$)	1127.9 *3*	100	7381.5+x	(26$^+$)
8802.2+x	(29$^-$)	1096.1 *3*	100	7706.1+x	(27$^-$)
8846.7+x	(29$^+$)	1218.6 *3*	100	7628.1+x	(27$^+$)
8890.6+x	(29$^+$)	1220.1 *3*	100	7670.5+x	(27$^+$)
9160.1+x	(29$^-$)	1292.3 *3*	100	7867.8+x	(27$^-$)
9275.0+x	(29$^-$)	1129.7 *3*	100	8145.3+x	(27$^-$)
9370.7+x	(30$^-$)	1130.1 *3*	100	8240.6+x	(28$^-$)
9656.6+x	(30$^+$)	1284.5 *3*	100	8372.1+x	(28$^+$)
9730.3+x	(30$^+$)	1220.9 *3*	100	8509.4+x	(28$^+$)
9846.2+x	(30$^-$)	1337.0 *3*	100	8509.2+x	(28$^-$)
9966.0+x	(31$^-$)	1163.7 *3*	100	8802.2+x	(29$^-$)
10156.6+x	(31$^+$)	1309.9 *3*	100	8846.7+x	(29$^+$)
10188.7+x	(31$^+$)	1298.1 *3*	100	8890.6+x	(29$^+$)
10526.3+x	(31$^-$)	1366.1 *3*	100	9160.1+x	(29$^-$)
10569.1+x	(32$^-$)	1198.4 *3*	100	9370.7+x	(30$^-$)
11048.6+x	(32$^+$)	1318.3 *3*	100	9730.3+x	(30$^+$)
11204.3+x	(33$^-$)	1238.3 *3*	100	9966.0+x	(31$^-$)
11562.9+x	(33$^+$)	1374.2[b] *3*	100	10188.7+x	(31$^+$)
11836.1+x	(34$^-$)	1267.0 *3*	100	10569.1+x	(32$^-$)
12411.4+x	(34$^+$)	1362.8 *3*	100	11048.6+x	(32$^+$)

† Primarily from (^{40}Ca,3pnγ) for high-spin levels and from ^{130}Nd ε decay for low-spin levels. Selected Eγ's given in other high-spin reactions are in general agreement with those from (^{40}Ca,3pnγ).
‡ Other: 73 *8* in (^{28}Si,αp3nγ).
# Branching ratios from 770.1+x level disagree in (^{35}Cl,2n2$\alpha\gamma$) reaction: Iγ(434):Iγ(252):Iγ(238):Iγ(192)= 73 *5*:100 *9*:77 *9*:23 *5*.
@ Other: 32 *5* in (^{35}Cl,2n2$\alpha\gamma$).
& Other: 70 *7* in (^{28}Si,αp3nγ).
[a] Other: 1095 in (^{32}S,αpnγ).
[b] Other: 1381.5 *6* in (^{35}Cl,2n2$\alpha\gamma$).
[c] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

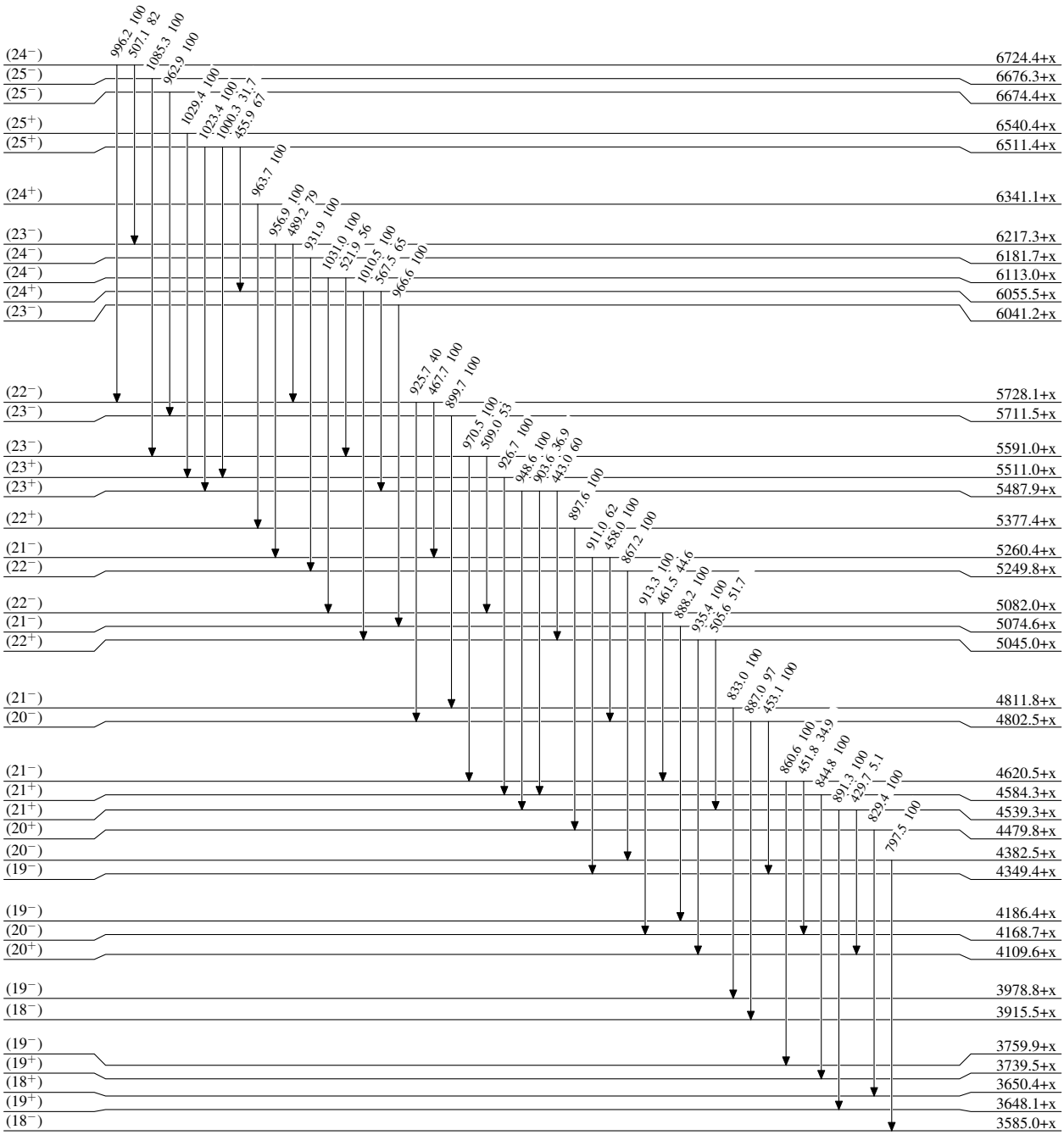


$^{130}_{59}Pr_{71}$

Adopted Levels, Gammas

Level Scheme (continued)

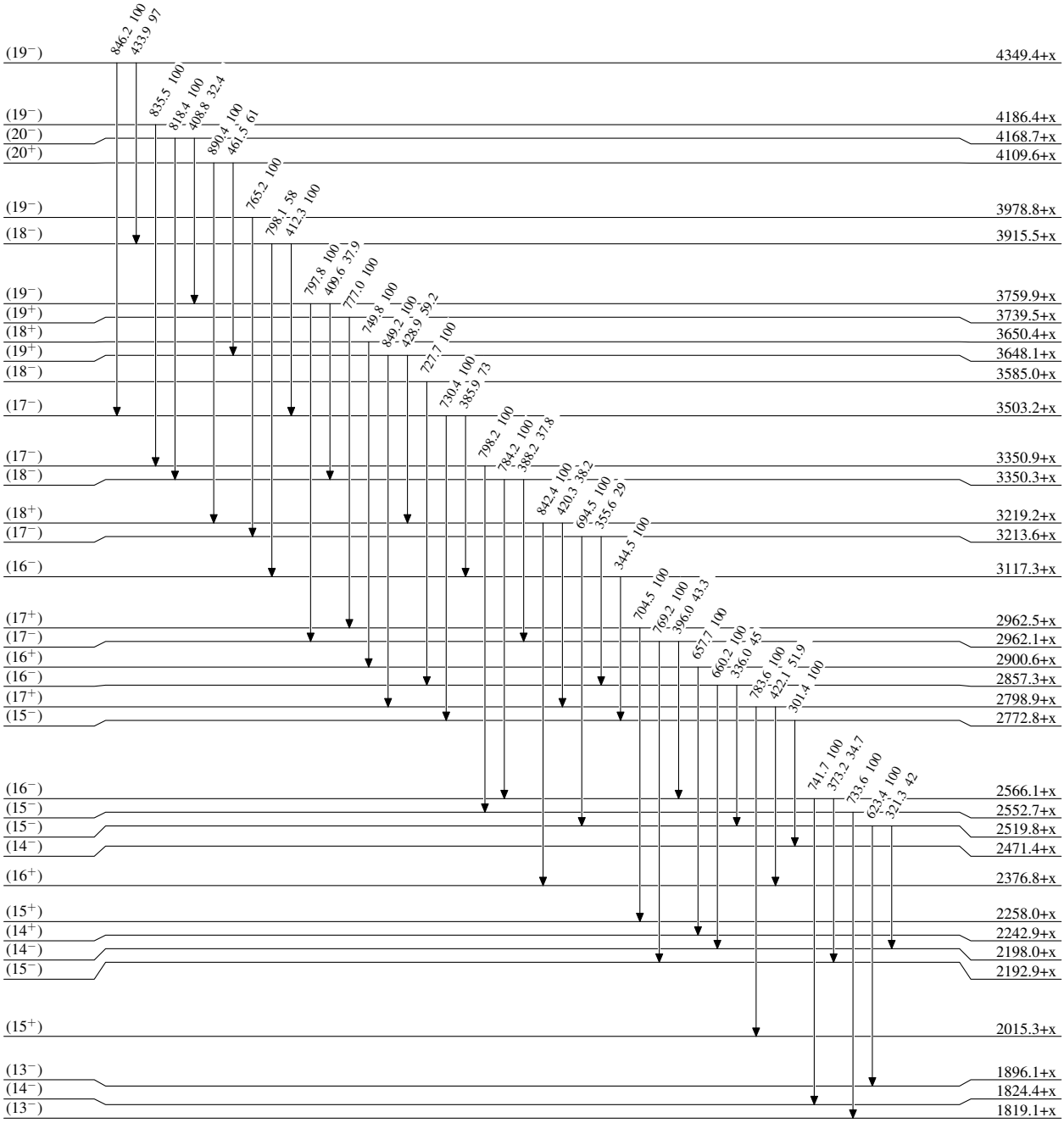
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

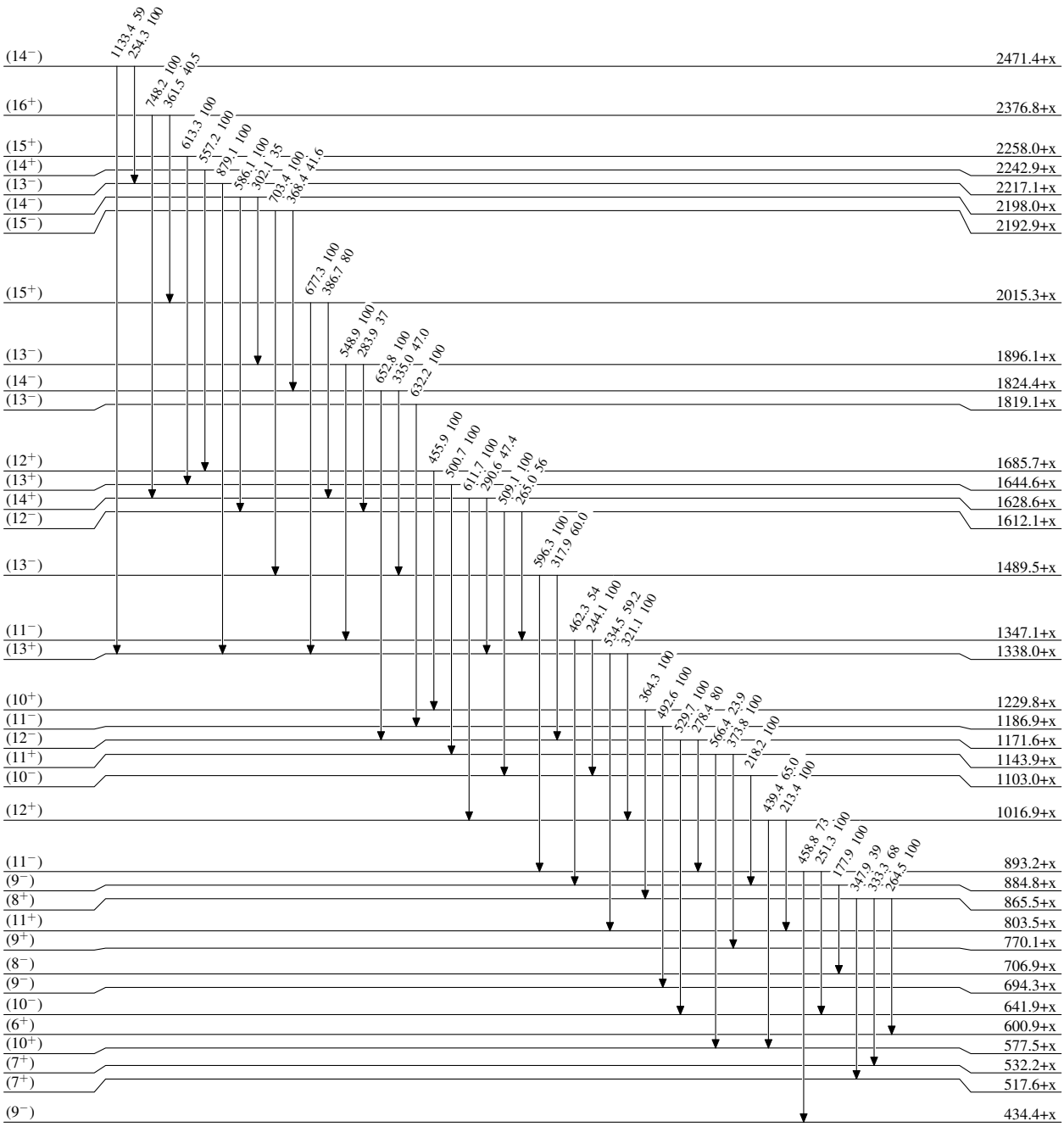
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{130}_{59}Pr_{71}$

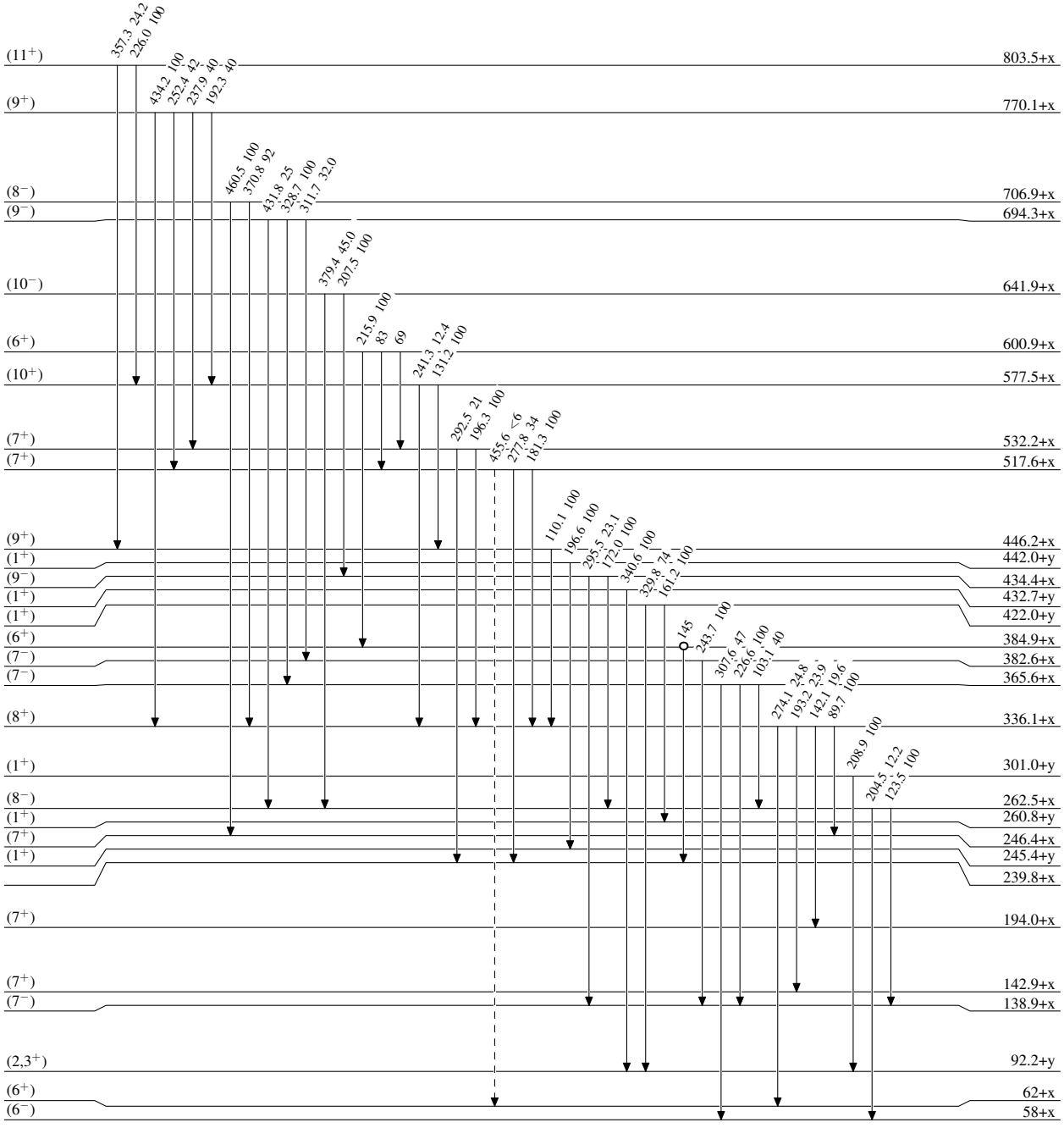
Legend

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ▶ γ Decay (Uncertain)
● Coincidence
○ Coincidence (Uncertain)

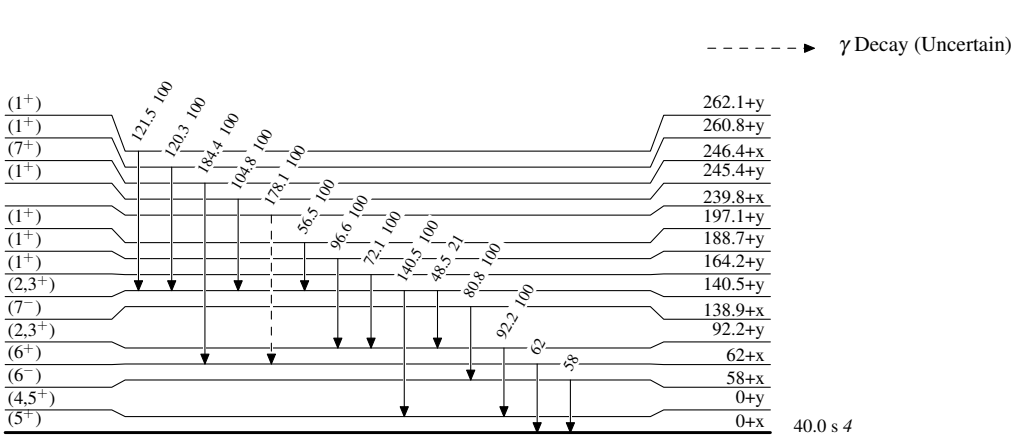


$^{130}_{59}Pr_{71}$

Adopted Levels, Gammas

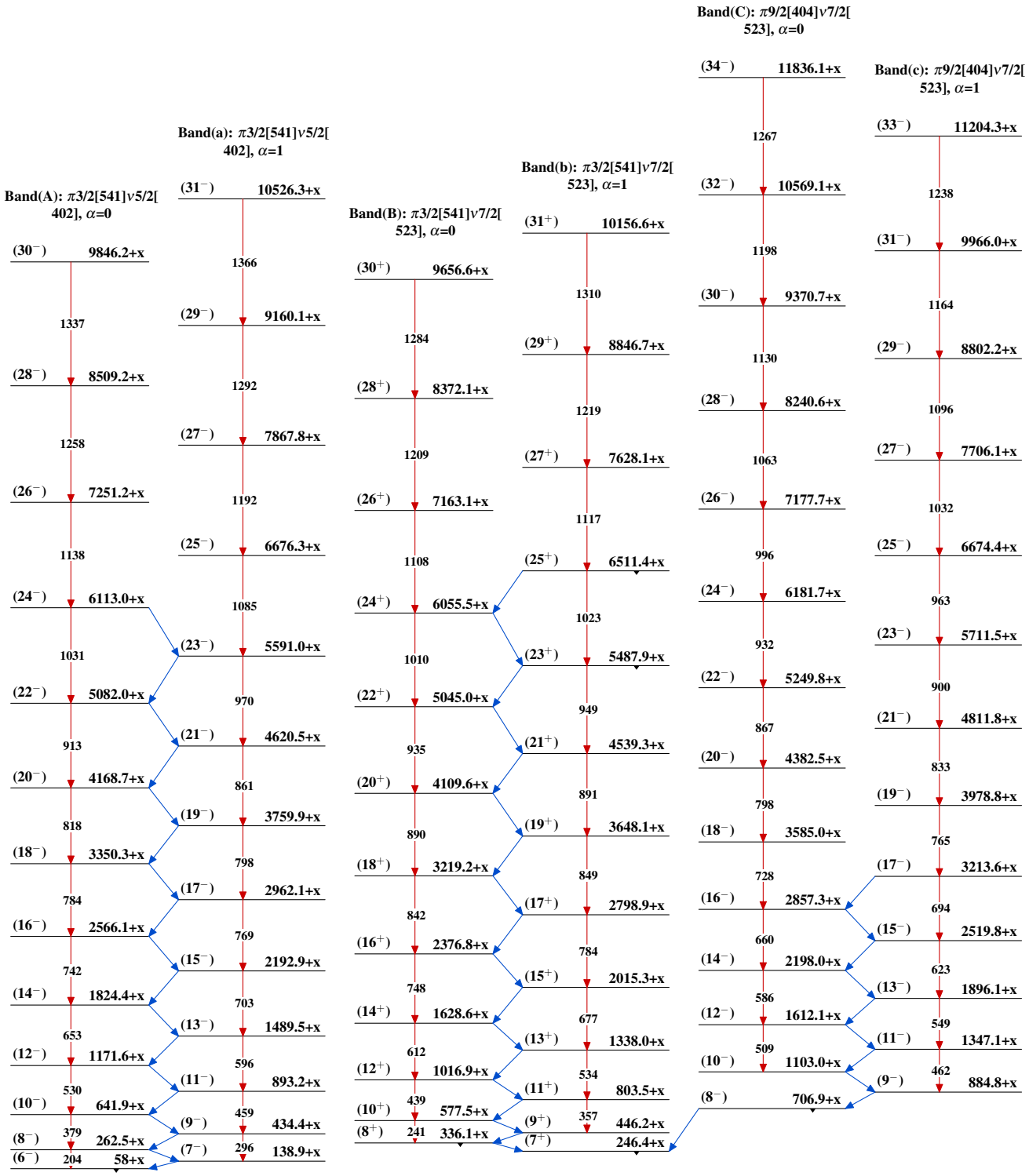
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{130}_{59}Pr_{71}$

Adopted Levels, Gammas



$^{130}_{59}Pr_{71}$

Adopted Levels, Gammas (continued)