

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov		NDS 107,2715 (2006)	17-Jul-2006

$Q(\beta^-) = -6.53 \times 10^3$ 6; $S(n) = 1.120 \times 10^4$ 8; $S(p) = 2.17 \times 10^3$ 6; $Q(\alpha) = 1.17 \times 10^3$ 6 [2012Wa38](#)

Note: Current evaluation has used the following Q record -6510 60 11170 80 2140 60 1190 60 [2003Au03](#).

$Q(\epsilon p) = 60$ 60 ([2003Au03](#)).

$^{132}\text{Pm}(\epsilon p)$: $\% \epsilon p \approx 5 \times 10^{-5}$, $E(p) = 2.2\text{--}5.0$ MeV (from thesis by P.A. Wilmarth (U.C., Berkeley (1988)), also Rept. LBL-26101.

In the comments for each rotational band the mean-squared deviation Δ of the energy values calculated with use of Variable Moment of Inertia model from the experimental ones is presented.

 ^{131}Pr LevelsCross Reference (XREF) Flags

A	^{131}Nd ϵ decay	D	$^{94}\text{Mo} (^{40}\text{Ca}, 3p\gamma)$
B	^{131}Pr IT decay (5.73 s)	E	$^{107}\text{Ag} (^{28}\text{Si}, 2p2n\gamma)$
C	$^{98}\text{Mo} (^{37}\text{Cl}, 4n\gamma)$	F	^{132}Pm ϵp decay

E(level) ^{†‡}	J^π	$T_{1/2}$	XREF	Comments
0.0 ^{&}	(3/2 ⁺)	1.51 min 2	ABC F	$\% \epsilon + \% \beta^+ = 100$ J^π : from systematics of odd-A Pr isotopes structure. $T_{1/2}$: weighted average of 1.57 min 7 (1996Gi08), 1.58 min 5 (1983GaZT), 1.48 min 2 (1983AkZZ), 1.7 min 3 (1977Bo02), 1.62 min 8 (1993GeZZ).
87.57 ^a 12	(5/2 ⁺)		ABC	J^π : M1 γ to (3/2 ⁺) level, $\log ft = 5.6$ from (5/2 ⁺).
152.4 [@] 3	(11/2 ⁻)	5.73 s 20	BCDE	$\% \epsilon + \% \beta^+ = 3.6$ 12; $\% IT = 96.4$ 12 (1996Ge12) Other: $\% \epsilon + \% \beta^+ = 5$, $\% IT = 95$ (1993GeZZ). J^π : E3 γ to (5/2 ⁺) level. $T_{1/2}$: weighted average of 6.5 s 10 (1983ViZU), 5.7 s 2 (1992GeZZ , 1993GeZZ , 1996Ge12).
251.69 ^{&} 15	(7/2 ⁺) [#]		A C E	J^π : M1 γ to (5/2 ⁺) level, $\log ft = 5.9$ from (5/2 ⁺).
261.94 13	(5/2, 7/2 ⁺)		A	J^π : M1, E2 γ to (5/2 ⁺) level, $\log ft = 5.6$ from (5/2 ⁺).
408.8 [@] 3	(15/2 ⁻) [#]		CDE	
448.43 ^a 17	(9/2 ⁺) [#]		A C E	
450.07 16	(7/2 ⁺)		A CD	J^π : $\log ft = 5.75$ from (5/2 ⁺), (E2) γ to (3/2 ⁺) level.
515.74 19	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.1$ from (5/2 ⁺).
556.93 19	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 5.84$ from (5/2 ⁺), from decay pattern.
571.96 21	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.2$ from (5/2 ⁺), from decay pattern.
668.83 20	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.1$ from (5/2 ⁺), from decay pattern.
679.65 ^{&} 21	(11/2 ⁺) [#]		A C E	
680.97 21	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.3$ from (5/2 ⁺), from decay pattern.
724.06 17	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.2$ from (5/2 ⁺), from decay pattern.
772.6 5	(3/2, 5/2, 7/2)		A	J^π : $\log ft = 6.8$ from (5/2 ⁺).
787.50 21	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.2$ from (5/2 ⁺), from decay pattern.
799.0 4	(3/2, 5/2, 7/2)		A	J^π : $\log ft = 6.3$ from (5/2 ⁺).
828.58 25	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.2$ from (5/2 ⁺), from decay pattern.
875.8 [@] 3	(19/2 ⁻) [#]		CDE	
892.5 4	(3/2, 5/2, 7/2)		A	J^π : $\log ft = 6.4$ from (5/2 ⁺).
923.64 22	(3/2, 5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.1$ from (5/2 ⁺), from decay pattern.
975.6 ^d 3	(9/2 ⁺)		A CD	J^π : D γ to (7/2 ⁺) level, D+Q γ 's to (7/2 ⁺), (9/2 ⁺) levels, HD bandhead.
980.0 ^a 3	(13/2 ⁺) [#]		C E	
1075.99 18	(5/2, 7/2 ⁺)		A	J^π : $\log ft = 6.5$ from (5/2 ⁺), from decay pattern.

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Adopted Levels, Gammas (continued)

^{131}Pr Levels (continued)				
E(level) ^{†‡}	J ^π	T _{1/2}	XREF	Comments
1156.5 ^e 5	(11/2 ⁺) [#]		CD	
1239.7 7	(3/2,5/2,7/2 ⁺)		A	J ^π : log ft=6.3 from (5/2 ⁺), from decay pattern.
1240.7 ^{&} 3	(15/2 ⁺) [#]		C E	
1353.7 ^d 5	(13/2 ⁺) [#]		CD	
1502.0 [@] 4	(23/2 ⁻) [#]	1.20 ps 10	CDE	
1567.3 ^e 5	(15/2 ⁺) [#]		CD	
1617.4 ^a 4	(17/2 ⁺) [#]		C E	
1798.4 ^d 5	(17/2 ⁺) [#]		CD	
1870.7? 5			E	This level is suggested in $^{107}\text{Ag}(^{28}\text{Si},2\text{p}2\text{n}\gamma)$ reaction only.
1950.6 ^{&} 4	(19/2 ⁺) [#]		C E	
2047.4 ^e 6	(19/2 ⁺) [#]		CD	
2118.5 ^a 4	(21/2 ⁺) [#]		C E	
2243.5 [@] 4	(27/2 ⁻) [#]	0.60 ps 7	CDE	
2314.3 ^d 6	(21/2 ⁺) [#]		CD	
2328.3 ^{&} 4	(23/2 ⁺) [#]		C E	
2359.8 ^b 8	(19/2 ⁺)		C	J ^π : from possible band structure.
2455.8 ^c 7	(21/2 ⁺) [#]		C	
2541.7 ^a 5	(25/2 ⁺) [#]		C E	
2599.3 ^e 6	(23/2 ⁺) [#]		CD	
2607.8 ^b 6	(23/2 ⁺) [#]		C	
2797.2 ^{&} 5	(27/2 ⁺) [#]		C E	
2819.7 ^c 7	(25/2 ⁺) [#]		C	
2901.3 ^d 7	(25/2 ⁺) [#]		CD	
3050.6 [@] 5	(31/2 ⁻) [#]	0.62 ps 6	CDE	
3082.7 ^a 6	(29/2 ⁺) [#]		C E	
3094.0 ^b 7	(27/2 ⁺) [#]		C	
3223.3 ^e 7	(27/2 ⁺) [#]		CD	
3415.7 ^{&} 5	(31/2 ⁺) [#]		C E	
3416.3 ^c 7	(29/2 ⁺) [#]		C	
3566.3 ^d 7	(29/2 ⁺) [#]		CD	
3769.7 ^a 7	(33/2 ⁺) [#]		C E	
3781.2 ^b 8	(31/2 ⁺) [#]		C	
3882.7 [@] 5	(35/2 ⁻) [#]	1.08 ps 19	CDE	
3916.3 ^e 7	(31/2 ⁺) [#]		CD	
4178.3 ^c 8	(33/2 ⁺) [#]		C	
4186.6 ^{&} 6	(35/2 ⁺) [#]		C E	
4304.3 ^d 8	(33/2 ⁺) [#]		CD	
4598.7 ^a 9	(37/2 ⁺) [#]		C E	
4605.0 ^b 8	(35/2 ⁺) [#]		C	
4681.3 ^e 8	(35/2 ⁺) [#]		CD	
4754.4 [@] 6	(39/2 ⁻) [#]	0.35 ps 3	CDE	
5052.7 ^c 8	(37/2 ⁺) [#]		C	
5091.0 ^{&} 7	(39/2 ⁺) [#]		C E	

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Adopted Levels, Gammas (continued) ^{131}Pr Levels (continued)

E(level) ^{†‡}	J ^π	T _{1/2}	XREF	E(level) ^{†‡}	J ^π	XREF
5105.3 ^d 9	(37/2 ⁺) [#]	<0.38 ps	D	7743.7 ^a 11	(49/2 ⁺) [#]	C
5502.3 ^e 9	(39/2 ⁺) [#]		CD	7854.3 ^d 11	(49/2 ⁺) [#]	D
5550.7 ^a 9	(41/2 ⁺) [#]		C	7868.4 [@] 8	(51/2 ⁻) [#]	CD
5704.9 [@] 6	(43/2 ⁻) [#]		CD	8357.3 ^e 12	(51/2 ⁺) [#]	D
5960.3 ^d 10	(41/2 ⁺) [#]		D	8898.3 ^d 12	(53/2 ⁺) [#]	D
6107.4 ^{&} 7	(43/2 ⁺) [#]		C	9016.9 [@] 11	(55/2 ⁻) [#]	CD
6394.3 ^e 10	(43/2 ⁺) [#]		CD	9454.3 ^e 12	(55/2 ⁺) [#]	D
6604.7 ^a 10	(45/2 ⁺) [#]		C	10189.9 [@] 13	(59/2 ⁻) [#]	CD
6746.4 [@] 7	(47/2 ⁻) [#]		CD	10636.3 ^e 13	(59/2 ⁺) [#]	D
6878.3 ^d 10	(45/2 ⁺) [#]		D	11429.9 [@] 14	(61/2 ⁻) [#]	C
7214.4 ^{&} 8	(47/2 ⁺) [#]		C	12756.9 [@] 14	(65/2 ⁻) [#]	C
7343.3 ^e 11	(47/2 ⁺) [#]		D			

[†] If $\Delta E\gamma$ not given, ± 0.40 keV assumed for least-squares fitting.

[‡] From least-squares fit to $E\gamma$'s.

[#] From D+Q(M1+E2) or stretched Q(E2) γ cascades to bandhead.

[@] Band(A): band with $\Delta J=2$, configuration= $(\pi h_{11/2})$, $\alpha=-1/2$; $Q_0=3.3$ 2 eb, $\beta_2=0.19$ 1; ($\Delta=175$ keV).

[&] Band(B): band based on $(3/2^+)$, $\alpha=-1/2$; ($\Delta=171$ keV).

^a Band(C): band based on $(3/2^+)$, $\alpha=+1/2$; ($\Delta=224$ keV) Unified band β^+C ($K=3/2$, $\Delta=188$ keV).

^b Band(D): band based on $(19/2^+)$, $\alpha=-1/2$; ($\Delta=102$ keV).

^c Band(E): band based on $(19/2^+)$, $\alpha=+1/2$; ($\Delta=77$ keV) Unified band D+E ($K=19/2$, $\Delta=97$ keV).

^d Band(F): Highly-deformed band-1 based on $(9/2^+)$; $Q_0=5.3$ 4 eb ; $\beta_2=0.31$ 2; ($\Delta=30$ keV).

^e Band(G): Highly-deformed band-2 based on $(9/2^+)$; $Q_0=5.3$ 4 eb ; $\beta_2=0.31$ 2; ($\Delta=45$ keV). Unified band F+G ($K=9/2$, $\Delta=47$ keV).

 $\gamma(^{131}\text{Pr})$

E _i (level)	J _i ^π	E _γ [†]	I _γ [‡]	E _f	J _f ^π	Mult. [#]	Comments
87.57	(5/2 ⁺)	87.6 2	100	0.0	(3/2 ⁺)	M1	B(E3)(W.u.)=41.2 20 Mult.: from ¹³¹ Nd ε decay and ¹⁰⁷ Ag(²⁸ Si,2pnγ).
152.4	(11/2 ⁻)	64.8 3	100	87.57	(5/2 ⁺)	E3	
251.69	(7/2 ⁺)	164.16 18	100	87.57	(5/2 ⁺)	M1	
261.94	(5/2,7/2 ⁺)	251.6 4	14.0 15	0.0	(3/2 ⁺)	M1,E2	
		174.5 2	100 4	87.57	(5/2 ⁺)		
		261.9 2	32 3	0.0	(3/2 ⁺)		
408.8	(15/2 ⁻)	256.4 1	100	152.4	(11/2 ⁻)	Q	
448.43	(9/2 ⁺)	196.81 24	100 12	251.69	(7/2 ⁺)	(E2)	
450.07	(7/2 ⁺)	360.87 24	85 8	87.57	(5/2 ⁺)		
		188.4 3	5.4 11	261.94	(5/2,7/2 ⁺)		
		198.5 5	14 3	251.69	(7/2 ⁺)		
		362.38 29	100 4	87.57	(5/2 ⁺)		
515.74	(3/2,5/2,7/2 ⁺)	450.00 24	17 2	0.0	(3/2 ⁺)	(E2)	
		253.8 4	41 5	261.94	(5/2,7/2 ⁺)		
		428.2 2	100 18	87.57	(5/2 ⁺)		
556.93	(3/2,5/2,7/2 ⁺)	515.6 4	100 18	0.0	(3/2 ⁺)		
		305.2 2	86 8	251.69	(7/2 ⁺)		
		469.4 2	100 6	87.57	(5/2 ⁺)		
571.96	(3/2,5/2,7/2 ⁺)	310.0 4	29 3	261.94	(5/2,7/2 ⁺)		

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Adopted Levels, Gammas (continued)

$\gamma(^{131}\text{Pr})$ (continued)						
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #
571.96	(3/2,5/2,7/2 ⁺)	484.4 2	100 6	87.57	(5/2 ⁺)	
668.83	(3/2,5/2,7/2 ⁺)	220.5 2	63 13	448.43	(9/2 ⁺)	
		406.8 4	46 13	261.94	(5/2,7/2 ⁺)	
		417.1 4	100 19	251.69	(7/2 ⁺)	
		581.1 3	63 13	87.57	(5/2 ⁺)	
679.65	(11/2 ⁺)	231.0		448.43	(9/2 ⁺)	
		427.92 18		251.69	(7/2 ⁺)	(E2)
680.97	(3/2,5/2,7/2 ⁺)	419.5 5	26 11	261.94	(5/2,7/2 ⁺)	
		593.3 3	100 14	87.57	(5/2 ⁺)	
		680.9 3	86 14	0.0	(3/2 ⁺)	
724.06	(3/2,5/2,7/2 ⁺)	462.1 2	38 4	261.94	(5/2,7/2 ⁺)	
		636.5 3	36 9	87.57	(5/2 ⁺)	
		724.1 3	100 9	0.0	(3/2 ⁺)	
772.6	(3/2,5/2,7/2)	685.0 4	100	87.57	(5/2 ⁺)	
787.50	(3/2,5/2,7/2 ⁺)	525.4 3	12 3	261.94	(5/2,7/2 ⁺)	
		535.9 3	25 4	251.69	(7/2 ⁺)	
		700.0 3	100 13	87.57	(5/2 ⁺)	
799.0	(3/2,5/2,7/2)	547.3 3	100	251.69	(7/2 ⁺)	
828.58	(3/2,5/2,7/2 ⁺)	576.8 3	70 10	251.69	(7/2 ⁺)	
		741.1 3	100 10	87.57	(5/2 ⁺)	
875.8	(19/2 ⁻)	467.0 2	100	408.8	(15/2 ⁻)	(E2)
892.5	(3/2,5/2,7/2)	804.9 3	100	87.57	(5/2 ⁺)	
923.64	(3/2,5/2,7/2 ⁺)	835.8 3	73 7	87.57	(5/2 ⁺)	
		923.9 3	100 9	0.0	(3/2 ⁺)	
975.6	(9/2 ⁺)	525.62 29	60 16	450.07	(7/2 ⁺)	D
		526.8 5	100 20	448.43	(9/2 ⁺)	D+Q
		724.7 10	80 40	251.69	(7/2 ⁺)	D+Q
980.0	(13/2 ⁺)	300.0		679.65	(11/2 ⁺)	
		532.0		448.43	(9/2 ⁺)	(E2)
1075.99	(5/2,7/2 ⁺)	627.5 3	50 15	448.43	(9/2 ⁺)	
		824.3 1	100 25	251.69	(7/2 ⁺)	
1156.5	(11/2 ⁺)	181.0		975.6	(9/2 ⁺)	D+Q
1239.7	(3/2,5/2,7/2 ⁺)	1152.0 8	85 9	87.57	(5/2 ⁺)	
		1240 1	100 9	0.0	(3/2 ⁺)	
1240.7	(15/2 ⁺)	261		980.0	(13/2 ⁺)	
		561.0		679.65	(11/2 ⁺)	(E2)
		832		408.8	(15/2 ⁻)	
1353.7	(13/2 ⁺)	197.0		1156.5	(11/2 ⁺)	D+Q
		378.0		975.6	(9/2 ⁺)	(E2)
1502.0	(23/2 ⁻)	626.2 1	100	875.8	(19/2 ⁻)	(E2)
1567.3	(15/2 ⁺)	213.0		1353.7	(13/2 ⁺)	D+Q
		411.0		1156.5	(11/2 ⁺)	(E2)
1617.4	(17/2 ⁺)	377.0		1240.7	(15/2 ⁺)	
		637.0		980.0	(13/2 ⁺)	(E2)
1798.4	(17/2 ⁺)	231.0		1567.3	(15/2 ⁺)	D+Q
		445.0		1353.7	(13/2 ⁺)	(E2)
1870.7?		630		1240.7	(15/2 ⁺)	
1950.6	(19/2 ⁺)	710.0		1240.7	(15/2 ⁺)	(E2)
		1074.5 4		875.8	(19/2 ⁻)	(E1)
2047.4	(19/2 ⁺)	249.0		1798.4	(17/2 ⁺)	D+Q
		480.0		1567.3	(15/2 ⁺)	(E2)
2118.5	(21/2 ⁺)	501.0		1617.4	(17/2 ⁺)	(E2)
		616		1502.0	(23/2 ⁻)	
		1243		875.8	(19/2 ⁻)	

B(E2)(W.u.)=124 11

 E_γ : from $^{107}\text{Ag}(^{28}\text{Si},2\text{p}2\text{n}\gamma)$ reaction only. E_γ : measured in $^{107}\text{Ag}(^{28}\text{Si},2\text{p}2\text{n}\gamma)$ reaction only.

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Adopted Levels, Gammas (continued) $\gamma(^{131}\text{Pr})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	Comments
2243.5	(27/2 ⁻)	741.5 2	100	1502.0 (23/2 ⁻)	(E2)		B(E2)(W.u.)=106 13
2314.3	(21/2 ⁺)	267		2047.4 (19/2 ⁺)	D+Q		
		516		1798.4 (17/2 ⁺)	(E2)		
2328.3	(23/2 ⁺)	377.7 2	100 8	1950.6 (19/2 ⁺)	(E2)		
		826.4 2	94 15	1502.0 (23/2 ⁻)	(E1)		
2455.8	(21/2 ⁺)	96		2359.8 (19/2 ⁺)			
2541.7	(25/2 ⁺)	423.0	100 16	2118.5 (21/2 ⁺)	(E2)		
		1040	60 9	1502.0 (23/2 ⁻)			
2599.3	(23/2 ⁺)	285		2314.3 (21/2 ⁺)	D+Q		
		552		2047.4 (19/2 ⁺)	(E2)		
2607.8	(23/2 ⁺)	152		2455.8 (21/2 ⁺)			
		294		2314.3 (21/2 ⁺)	E2+M1		δ : +0.4 $\leq\delta\leq$ +2.5 from $^{98}\text{Mo}(^{37}\text{Cl},4n\gamma)$.
		560		2047.4 (19/2 ⁺)	(E2)		
2797.2	(27/2 ⁺)	468.9 3	100	2328.3 (23/2 ⁺)	(E2)		
2819.7	(25/2 ⁺)	212		2607.8 (23/2 ⁺)			
		364		2455.8 (21/2 ⁺)	(E2)		
2901.3	(25/2 ⁺)	302		2599.3 (23/2 ⁺)	D+Q		
		587		2314.3 (21/2 ⁺)	(E2)		
3050.6	(31/2 ⁻)	807.1 2	100	2243.5 (27/2 ⁻)	(E2)		B(E2)(W.u.)=67 7
3082.7	(29/2 ⁺)	541	100	2541.7 (25/2 ⁺)	(E2)		
3094.0	(27/2 ⁺)	274		2819.7 (25/2 ⁺)			
		486		2607.8 (23/2 ⁺)	(E2)		
3223.3	(27/2 ⁺)	322 @		2901.3 (25/2 ⁺)	D+Q		
		624.0		2599.3 (23/2 ⁺)	(E2)		
3415.7	(31/2 ⁺)	618.5 2	100	2797.2 (27/2 ⁺)	(E2)		
3416.3	(29/2 ⁺)	322 @		3094.0 (27/2 ⁺)			
		597		2819.7 (25/2 ⁺)	(E2)		
3566.3	(29/2 ⁺)	343		3223.3 (27/2 ⁺)	D+Q		
		665.0		2901.3 (25/2 ⁺)	(E2)		
3769.7	(33/2 ⁺)	687.0		3082.7 (29/2 ⁺)	(E2)		
3781.2	(31/2 ⁺)	365		3416.3 (29/2 ⁺)			
		687		3094.0 (27/2 ⁺)	(E2)		
3882.7	(35/2 ⁻)	832.1 2	100	3050.6 (31/2 ⁻)	(E2)		B(E2)(W.u.)=33 6
3916.3	(31/2 ⁺)	350		3566.3 (29/2 ⁺)	D+Q		
		693.0		3223.3 (27/2 ⁺)	(E2)		
4178.3	(33/2 ⁺)	397		3781.2 (31/2 ⁺)			
		762		3416.3 (29/2 ⁺)	(E2)		
4186.6	(35/2 ⁺)	770.9 2	100	3415.7 (31/2 ⁺)	(E2)		
4304.3	(33/2 ⁺)	388		3916.3 (31/2 ⁺)	D+Q		
		738.0		3566.3 (29/2 ⁺)	(E2)		
4598.7	(37/2 ⁺)	829.0		3769.7 (33/2 ⁺)	(E2)		
4605.0	(35/2 ⁺)	427		4178.3 (33/2 ⁺)			
		824		3781.2 (31/2 ⁺)	(E2)		E_γ : 840 in $^{107}\text{Ag}(^{28}\text{Si},2p2n\gamma)$ reaction.
4681.3	(35/2 ⁺)	765.0		3916.3 (31/2 ⁺)	(E2)		
4754.4	(39/2 ⁻)	871.7 2	100	3882.7 (35/2 ⁻)	(E2)		B(E2)(W.u.)=81 7
5052.7	(37/2 ⁺)	448		4605.0 (35/2 ⁺)			
		874		4178.3 (33/2 ⁺)	(E2)		
5091.0	(39/2 ⁺)	904.4 3	100	4186.6 (35/2 ⁺)	(E2)		
5105.3	(37/2 ⁺)	801		4304.3 (33/2 ⁺)	(E2)		
5502.3	(39/2 ⁺)	821.0		4681.3 (35/2 ⁺)	(E2)		
5550.7	(41/2 ⁺)	952		4598.7 (37/2 ⁺)	(E2)		
5704.9	(43/2 ⁻)	950.5 3	100	4754.4 (39/2 ⁻)	(E2)		B(E2)(W.u.)=48.57 8 E_γ : 938 in $^{107}\text{Ag}(^{28}\text{Si},2p2n\gamma)$ reaction.
5960.3	(41/2 ⁺)	855		5105.3 (37/2 ⁺)	(E2)		
6107.4	(43/2 ⁺)	1016.4 3	100	5091.0 (39/2 ⁺)	(E2)		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{131}\text{Pr})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	Comments
6394.3	(43/2 ⁺)	892.0		5502.3	(39/2 ⁺)	(E2)	
6604.7	(45/2 ⁺)	1054		5550.7	(41/2 ⁺)	(E2)	
6746.4	(47/2 ⁻)	1041.5 3	100	5704.9	(43/2 ⁻)	(E2)	E_γ : 1015 in $^{107}\text{Ag}(^{28}\text{Si}, 2\text{p}2\text{n}\gamma)$ reaction.
6878.3	(45/2 ⁺)	918		5960.3	(41/2 ⁺)	(E2)	
7214.4	(47/2 ⁺)	1107		6107.4	(43/2 ⁺)	(E2)	
7343.3	(47/2 ⁺)	949		6394.3	(43/2 ⁺)	(E2)	
7743.7	(49/2 ⁺)	1139		6604.7	(45/2 ⁺)	(E2)	
7854.3	(49/2 ⁺)	976		6878.3	(45/2 ⁺)	(E2)	
7868.4	(51/2 ⁻)	1122		6746.4	(47/2 ⁻)	(E2)	
8357.3	(51/2 ⁺)	1014		7343.3	(47/2 ⁺)	(E2)	E_γ : from $^{94}\text{Mo}(^{40}\text{Ca}, 3\text{p}\gamma)$ reaction.
8898.3	(53/2 ⁺)	1044		7854.3	(49/2 ⁺)	(E2)	E_γ : from $^{94}\text{Mo}(^{40}\text{Ca}, 3\text{p}\gamma)$ reaction.
9016.9	(55/2 ⁻)	1148.5 7		7868.4	(51/2 ⁻)	(E2)	
9454.3	(55/2 ⁺)	1097		8357.3	(51/2 ⁺)	(E2)	E_γ : from $^{94}\text{Mo}(^{40}\text{Ca}, 3\text{p}\gamma)$ reaction.
10189.9	(59/2 ⁻)	1173.0 7		9016.9	(55/2 ⁻)	(E2)	
10636.3	(59/2 ⁺)	1182		9454.3	(55/2 ⁺)	(E2)	E_γ : from $^{94}\text{Mo}(^{40}\text{Ca}, 3\text{p}\gamma)$ reaction.
11429.9	(61/2 ⁻)	1240		10189.9	(59/2 ⁻)	(E2)	
12756.9	(65/2 ⁻)	1327		11429.9	(61/2 ⁻)	(E2)	

[†] Weighted averages from $^{98}\text{Mo}(^{37}\text{Cl}, 4\text{n}\gamma)$ data assuming $\Delta E_\gamma = 0.4$ keV for γ -rays when not stated (by evaluators) and ^{131}Nd ε decay data, except as noted.

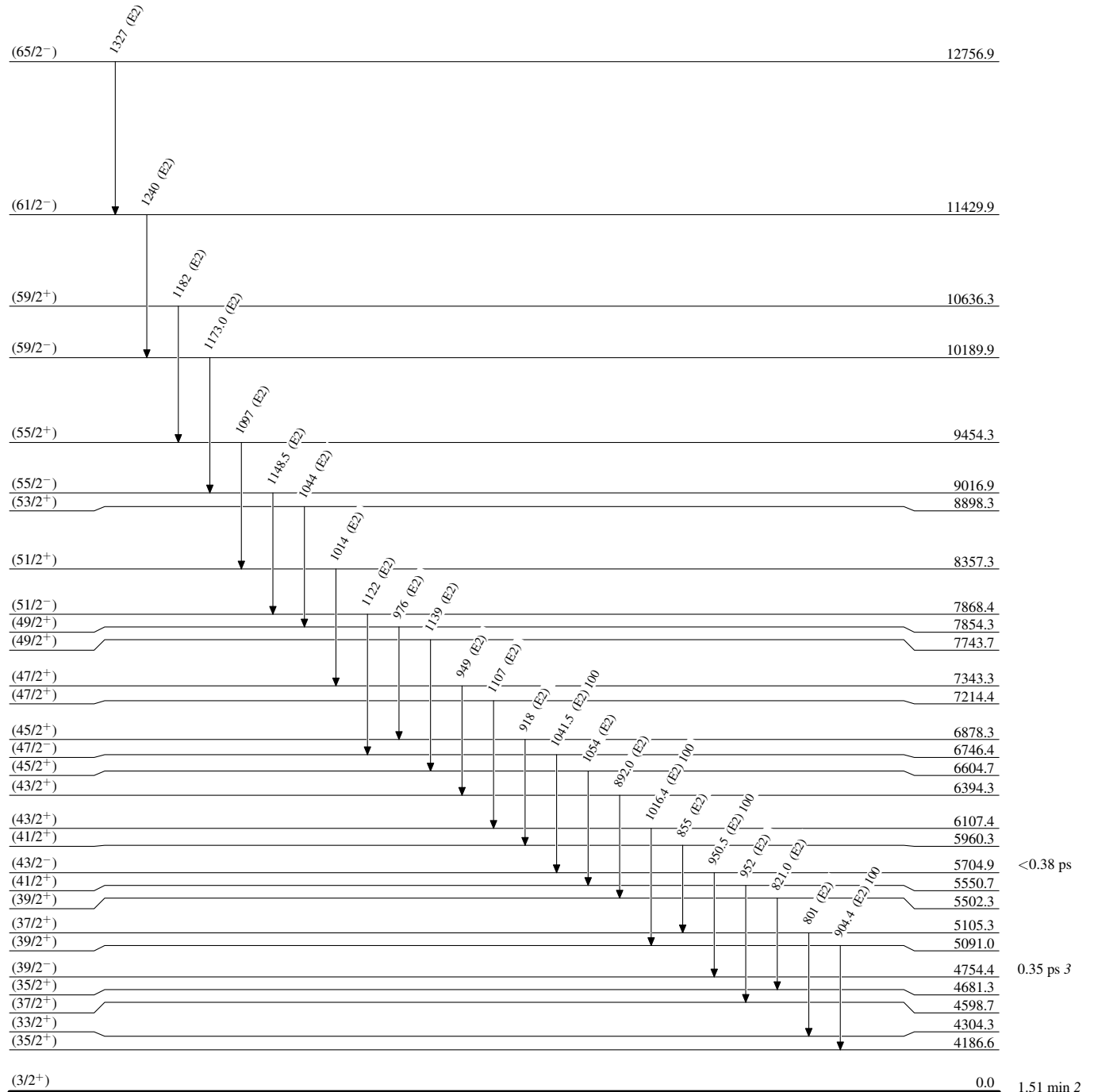
[‡] From ^{131}Nd ε decay and $^{107}\text{Ag}(^{28}\text{Si}, 2\text{p}2\text{n}\gamma)$.

[#] From $\alpha(\text{exp})$, $\gamma\gamma(\theta)$, $\gamma\gamma(\theta)(\text{DCO})$ analysis and also from regular sequence of transitions in a cascades of rotational bands.

[@] Multiply placed.

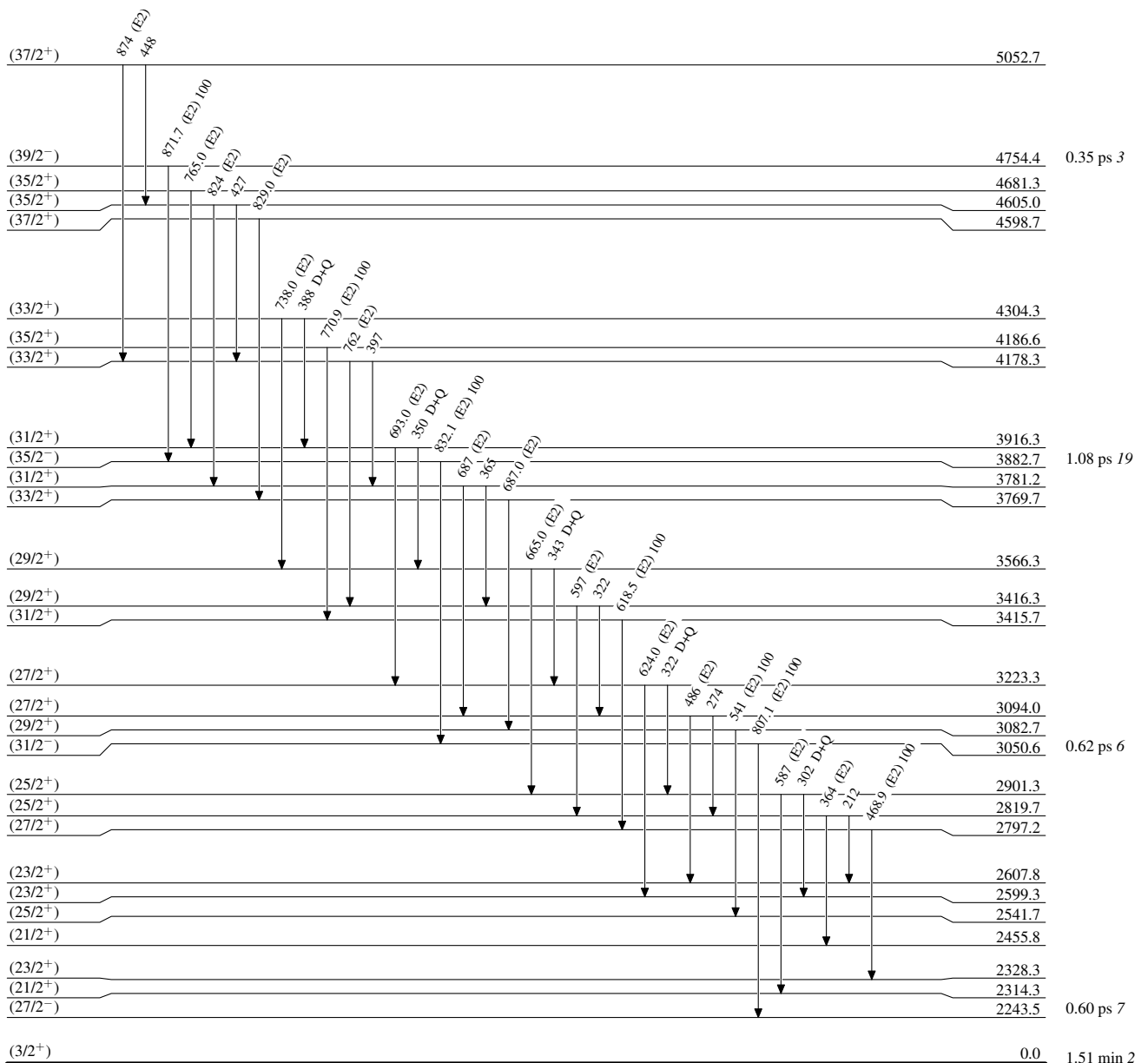
Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



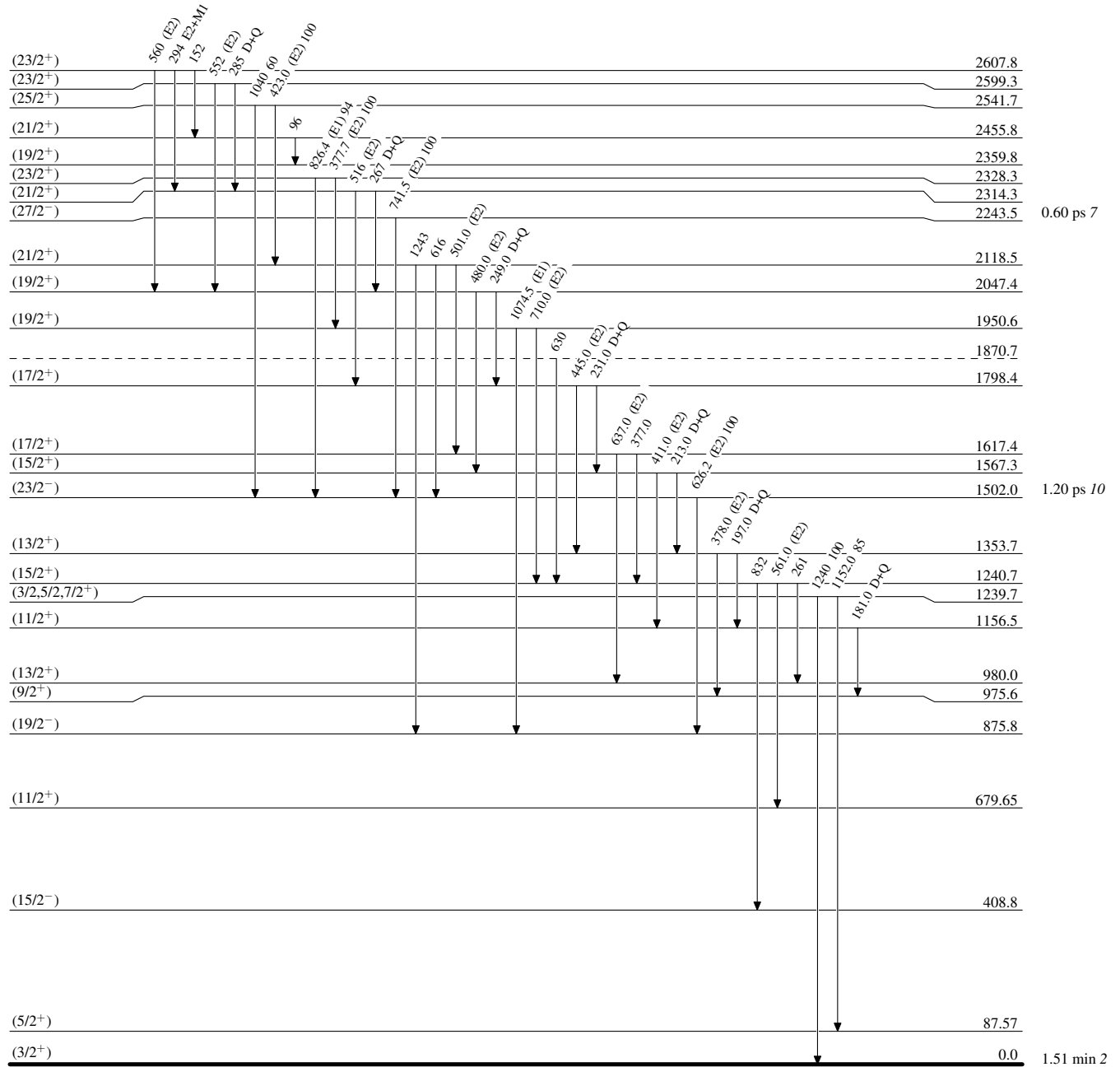
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level



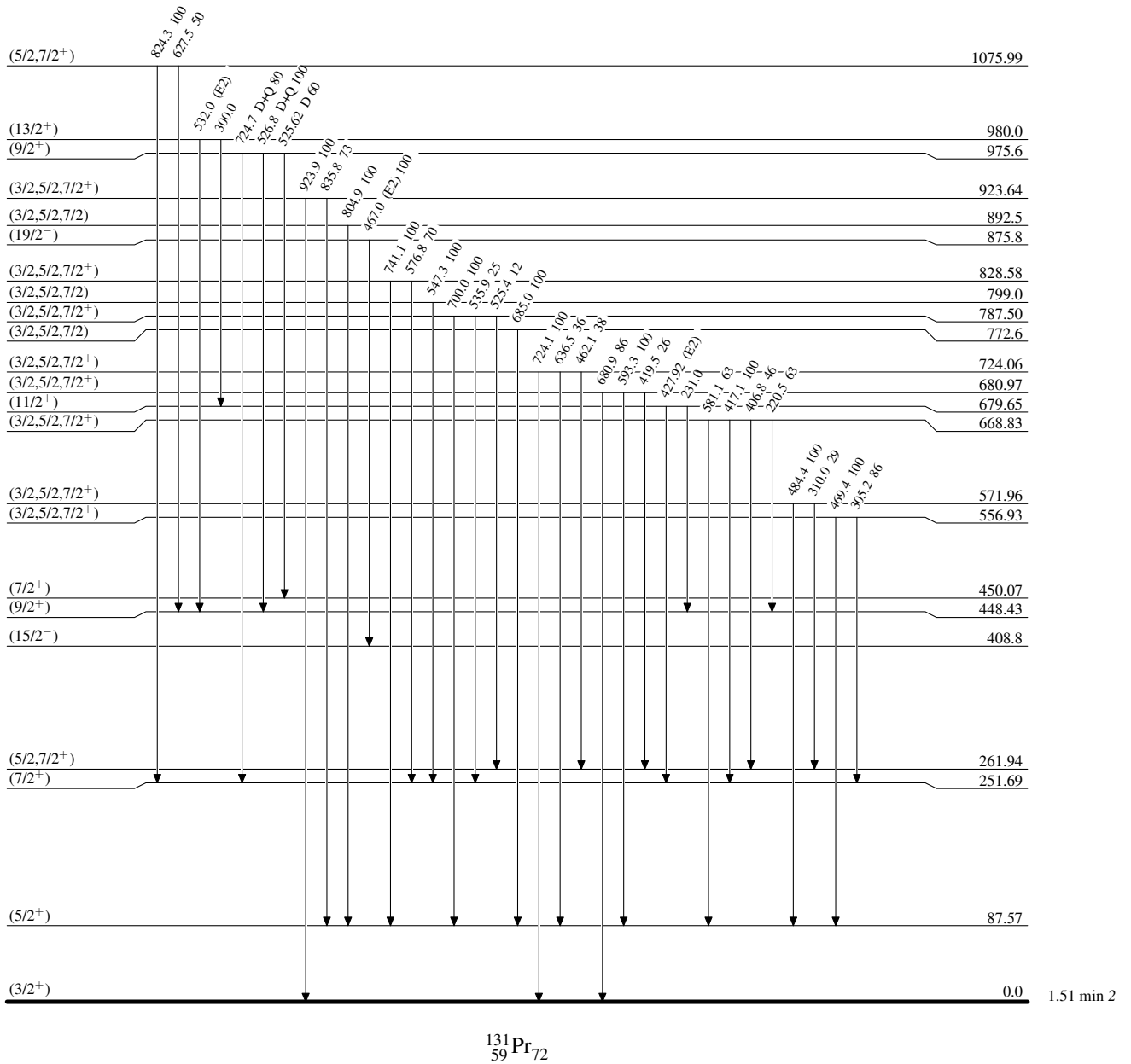
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



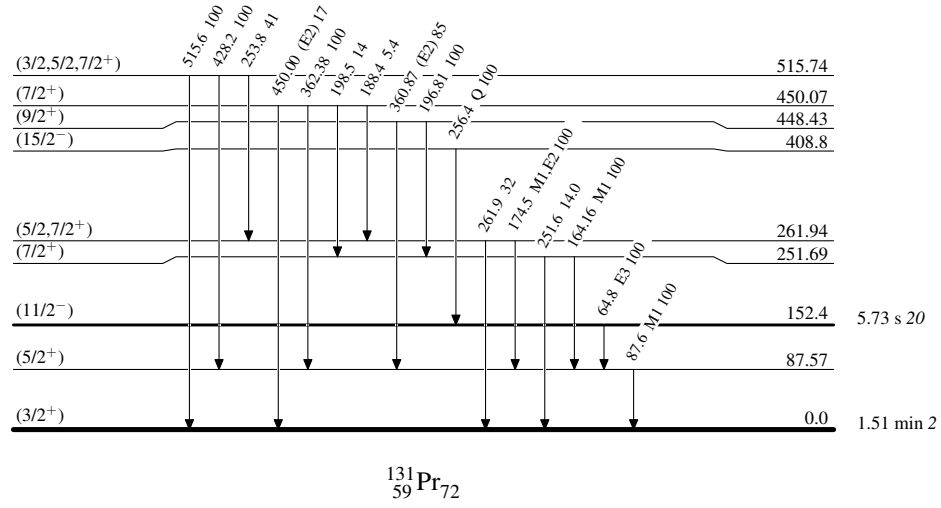
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Band(A): Band with $\Delta J=2$,
configuration=
 $\pi h_{11/2}$, $\alpha=-1/2$;
 $Q_0=3.3$ 2 eb,
 $\beta_2=0.19$ 1; ($\Delta=175$
keV)

(65/2 ⁻)	12756.9
1327	
(61/2 ⁻)	11429.9
1240	
(59/2 ⁻)	10189.9
1173	
(55/2 ⁻)	9016.9
1148	
(51/2 ⁻)	7868.4
1122	
(47/2 ⁻)	6746.4
1042	
(43/2 ⁻)	5704.9
950	
(39/2 ⁻)	4754.4
872	
(35/2 ⁻)	3882.7
832	
(31/2 ⁻)	3050.6
807	
(27/2 ⁻)	2243.5
742	
(23/2 ⁻)	1502.0
626	
(19/2 ⁻)	875.8
467	
(15/2 ⁻)	408.8
256	
(11/2 ⁻)	152.4

Band(B): Band based on
(3/2⁺), $\alpha=-1/2$;
($\Delta=171$ keV)

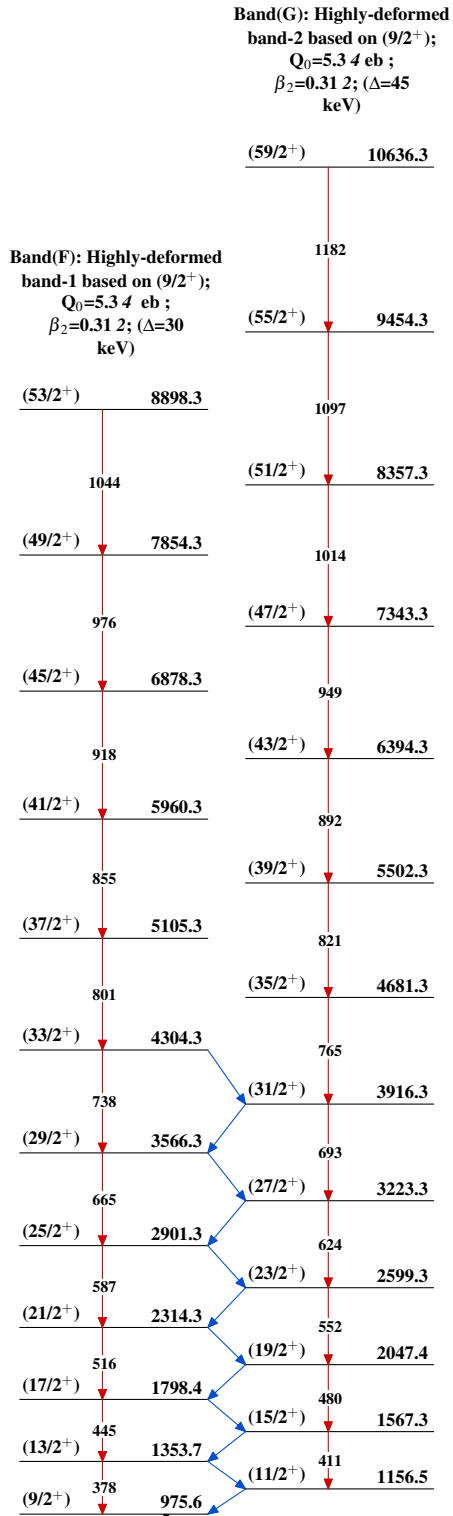
(47/2 ⁺)	7214.4
1107	
(43/2 ⁺)	6107.4
1016	
(39/2 ⁺)	5091.0
904	
(35/2 ⁺)	4186.6
771	
(31/2 ⁺)	3415.7
618	
(27/2 ⁺)	2797.2
469	
(23/2 ⁺)	2328.3
378	
(19/2 ⁺)	1950.6
710	
(15/2 ⁺)	1240.7
561	
(11/2 ⁺)	679.65
428	
(7/2 ⁺)	251.69
252	
(3/2 ⁺)	0.0

Band(C): Band based on
(3/2⁺), $\alpha=+1/2$;
($\Delta=224$ keV) Unified
band β^+C (K=3/2,
 $\Delta=188$ keV)

(49/2 ⁺)	7743.7
1139	
(45/2 ⁺)	6604.7
1054	
(41/2 ⁺)	5550.7
952	
(37/2 ⁺)	4598.7
829	
(33/2 ⁺)	3769.7
687	
(29/2 ⁺)	3082.7
541	
(25/2 ⁺)	2541.7
423	
(21/2 ⁺)	2118.5
501	
(17/2 ⁺)	1617.4
637	
(13/2 ⁺)	980.0
532	
(9/2 ⁺)	448.43
361	
(5/2 ⁺)	87.57

Band(E): Band based on
(19/2⁺), $\alpha=+1/2$;
($\Delta=77$ keV) Unified band
D+E (K=19/2, $\Delta=97$ keV)

(37/2 ⁺)	5052.7
874	
(33/2 ⁺)	4178.3
762	
(29/2 ⁺)	3416.3
597	
(25/2 ⁺)	2819.7
364	
(21/2 ⁺)	2455.8
4605.0	
(35/2 ⁺)	
824	
(31/2 ⁺)	3781.2
687	
(27/2 ⁺)	3094.0
486	
(23/2 ⁺)	2607.8
2359.8	
(19/2 ⁺)	

Adopted Levels, Gammas (continued) $^{131}_{59}\text{Pr}_{72}$