^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 187,1 (2023)	12-Oct-2022

J^π(^{141}Pr target)=5/2$^+$.

2008Sc17: E=1.5-3.2 MeV beam used in excitation function measurement delivered by Van de Graff accelerator at the University of Kentucky. Angular distribution measurement also performed, with E=2.0, 3.0 MeV. Measured Eγ, Iγ, γγ-coin, angular distributions using an HPGe detector with BGO Compton suppression. Measured half-lives using Doppler Shift Attenuation Method. Maximum angular momentum transfer limited to ≤6 relative to 5/2 for the target.

1994De56: E=1.0-2.8 MeV. Measured γ, γγ, γγ(t), excit, HPGe, FWHM=2 at E=1332; authors do not give Eγ uncertainties. Preliminary results: 1992De16.

E=2.6 MeV (1984Tr02), E=Fast reactor neutrons (1978AhZX), E=2.22 MeV (1974Si20,1970Da02).

Measured: γ (1984Tr02,1978AhZX,1974Si20,1970Da02), γ(θ) (1972An13), γγ (1984Tr02,1968Da14), n′ at E(n)=230-2580 keV tof (1969Ma05).

All data are from 2008Sc17, unless noted otherwise.

^{141}Pr Levels

E(level)†	Jπ#	$T_{1/2}$‡	Comments
0.0	5/2$^+$@		
145.45 *8*	7/2$^+$@	>1.23 ps	
1117.48 *11*	11/2$^-$	>0.76 ps	
1126.82 *10*	3/2$^+$@	>188 fs	
1292.72 *10*	5/2$^+$@	0.33 ps *+10−7*	
1298.68 *13*	1/2$^+$	0.34 ps *+22−10*	
1436.17 *12*	3/2$^+$@	0.23 ps *+8−5*	
1452.36 *10*	7/2$^+$@	0.31 ps *+11−7*	
1457.32 *11*	9/2$^+$	0.26 ps *+7−5*	
1493.96 *14*	11/2$^+$	0.46 ps *+36−15*	
1520.80 *11*	9/2$^+$	150 fs *+19−16*	
1580.06 *10*	5/2$^{(-)}$@	0.22 ps *+6−4*	
1608.38 *18*	3/2$^+$@	11.8 fs *7*	
1651.02 *13*	7/2$^+$	132 fs *+21−17*	Jπ: 9/2$^+$ is also stated in other places by 2008Sc17.
1657.05 *16*	1/2$^+$	>0.67 ps	
1767.07 *16*	13/2$^+$	>0.37 ps	
1786.50 *14*	(5/2,7/2)$^+$	0.19 ps *+5−4*	
1796.1 *3*	15/2$^+$@	>10.4 fs	
1812.36 *15*	9/2$^+$	0.8 ps *+12−3*	
1842.11 *14*	7/2$^+$	0.70 ps *+59−22*	
1853.70 *13*	11/2$^+$	0.8 ps *+16−3*	
1910.28?[b] *15*			Jπ: 1994De56 recommend 1/2$^-$.
1975.27 *15*	3/2$^+$	0.39 ps *+19−10*	
1985.93 *18*	13/2$^+$	>0.42 ps	
2000.07 *24*	13/2$^-$	0.13 ps *+11−5*	
2000.47[a] *16*	9/2$^-$	0.22 ps *+12−6*	
2003.71 *23*	11/2$^+$	0.7 ps *+10−3*	
2018.13 *15*	3/2$^+$	0.40 ps *+26−12*	
2045.11 *17*	9/2$^+$	0.68 ps *+86−25*	
2075.54 *12*	5/2$^+$,7/2$^+$	0.22 ps *+9−6*	Jπ: J^π(exp)=5/2,7/2 in Table II of 2008Sc17.
2100.9 *3*	3/2$^+$	0.17 ps *+7−4*	
2105.02[a] *19*	5/2$^-$	87 fs *+15−11*	Jπ: J^π(exp)=5/2$^-$,7/2$^-$ in Table II of 2008Sc17.
2105.3 *4*	15/2$^-$	0.15 ps *+49−8*	
2107.73 *25*	15/2$^+$	>28 fs	

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^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

^{141}Pr Levels (continued)

E(level)[†]	Jπ[#]	$T_{1/2}$[‡]	Comments
2126.01 *16*	11/2+	>114 fs	
2135.49[&] *21*	7/2−	0.27 ps *+11−7*	
2154.5[b] *4*			Jπ: 1994De56 suggest 3/2−,5/2−.
2172.0 *3*	9/2−	101 fs *+18−15*	
2188.16 *20*	3/2+	0.26 ps *+24−9*	
2190.37[&] *20*	1/2−	>215 fs	
2205.91 *22*	11/2+	171 fs *+40−28*	
2228.84[&] *15*	7/2+	0.7 ps *+61−4*	Jπ: *J*π(exp)=5/2,7/2+ in Table II of 2008Sc17.
2230.3?[b] *4*			Jπ: 1994De56 suggest 13/2+,15/2+.
2243.1?[b] *5*			Jπ: 1994De56 suggest 13/2+.
2247.7 *4*	5/2−	147 fs *+35−25*	
2254.0?[b]			Jπ: 1994De56 suggest 1/2+,3/2+.
2264.50 *17*	3/2+	0.18 ps *+10−7*	
2267.21 *18*	1/2+	>184 fs	
2302.6 *4*	9/2+	0.25 ps *+15−7*	
2315.66 *20*	5/2+,7/2+	130 fs *+35−24*	
2336.40[a] *22*	(15/2−)	>28 fs	
2345.84[&] *16*	9/2+	0.21 ps *+26−8*	Jπ: *J*π(exp)=7/2− in Table II of 2008Sc17.
2353.7?[b] *19*			Jπ: 1994De56 suggest 1/2−.
2362.93 *18*	5/2−	39 fs *+10−8*	
2364.84?[b] *17*			Jπ: 1994De56 suggest 7/2+.
2382.1[a] *3*	9/2−	0.24 ps *+28−9*	
2399.30?[b] *23*			Jπ: 1994De56 suggest 13/2+,15/2+.
2403.11 *24*	9/2+	0.49 ps *+85−20*	
2419.8 *3*	9/2+	0.5 ps *+17−2*	
2453.1 *3*	5/2−	18.7 fs *+35−28*	
2453.99 *23*	15/2+	>94 fs	
2461.87 *21*	5/2+	136 fs *+57−33*	Jπ: *J*π(exp)=5/2,7/2 in Table II of 2008Sc17.
2473.2?[&] *3*	1/2−	>14 fs	
2499.10?[b] *23*			Jπ: 1994De56 suggest 13/2+.
2499.76 *25*	9/2+	102 fs *+28−19*	
2520.16 *21*	3/2+	0.2 ps *+18−1*	
2563.9 *6*	7/2−	55 fs *+10−8*	Jπ: *J*π(exp)=7/2+ in Table II of 2008Sc17.
2580.69 *17*	11/2+	>13 fs	
2583.0[&] *6*	7/2−	24 fs *+7−6*	
2601.2 *6*	5/2−,7/2−	59 fs *+37−20*	E(level): Possible doublet with 2603.7 level. Jπ: *J*π(exp)=5/2,7/2 in Table II of 2008Sc17.
2603.7 *6*	5/2−,7/2−	28 fs *+12−9*	E(level): Possible doublet with 2601.2 level. Jπ: *J*π(exp)=5/2,7/2 in Table II of 2008Sc17.
2607.1 *8*	1/2+	0.12 ps *+11−5*	
2611.7 *5*	9/2+	29 fs *+5−4*	
2623.2 *4*	(5/2,7/2)+	72 fs *+19−14*	Jπ: *J*π(exp)=7/2 in Table II of 2008Sc17.
2646.4 *6*	9/2+	90 fs *+25−17*	
2659.6 *8*	11/2+	>156 fs	
2668.96[a] *23*	13/2−	42 fs *+23−14*	
2682.99 *25*	(5/2,7/2)+	0.22 ps *+22−8*	
2707.7[a] *5*	15/2−	0.04 ps *+12−3*	
2710.0 *3*	3/2+	0.16 ps *+46−8*	
2718.4[a] *4*	(9/2,11/2)	>159 fs	
2722.4 *4*	3/2+	44 fs *+16−11*	
2731.4 *3*	9/2+	55 fs *+23−15*	
2739.7 *4*	1/2−	>87 fs	

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^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

^{141}Pr Levels (continued)

E(level)[†]	J$^{\pi}$[#]	T$_{1/2}$[‡]	Comments
2777.5 *4*	9/2	44 fs *+12−9*	
2782.4 *6*	(5/2,7/2)$^+$	0.15 ps *+10−5*	J$^{\pi}$: *J*$^{\pi}$′s of 2782.4 and 2782.7 levels seem reversed in table II of 2008Sc17.
2782.7 *3*	13/2$^+$	>51 fs	J$^{\pi}$: *J*$^{\pi}$′s of 2782.4 and 2782.7 levels seem reversed in table II of 2008Sc17.
2801.80 *22*	9/2$^+$	0.12 ps *+16−5*	
2807.18 *18*	3/2$^+$,5/2$^-$	51 fs *+25−15*	J$^{\pi}$: *J*$^{\pi}$(exp)=3/2$^+$ in Table II of 2008Sc17.
2810.72 *22*	1/2$^+$	>76 fs	
2814.0 *3*	1/2$^-$	24 fs *+26−14*	
2837.5 *7*	(5/2,7/2)$^-$	24 fs *+13−9*	
2839.7 *4*	9/2$^-$	56 fs *+48−23*	J$^{\pi}$: *J*$^{\pi}$(exp)=3/2,9/2,11/2 in Table II of 2008Sc17.
2844.6 *4*	3/2$^-$	45 fs *+90−28*	
2847.5 *3*	9/2$^+$	>97 fs	
2863.4[&] *6*		0.06 ps *+150−4*	
2881.6[&] *4*	7/2$^+$,9/2$^+$	>55 fs	
2887.4[a] *3*	(9/2,11/2$^+$)	>24 fs	J$^{\pi}$: *J*$^{\pi}$(exp)=9/2,11/2 in Table II of 2008Sc17.
2896.8 *7*	11/2$^+$		
2929.2 *5*	(5/2,7/2)$^+$	0.08 ps *+14−4*	J$^{\pi}$: *J*$^{\pi}$(exp)=5/2,7/2 in Table II of 2008Sc17.
2941.4[&] *6*			
2950.5 *6*	1/2$^+$		
2983.5 *4*	(5/2,7/2)$^-$		J$^{\pi}$: *J*$^{\pi}$(exp)=3/2 in Table II of 2008Sc17.
3000.74 *23*	11/2$^+$		
3016.3 *5*	5/2$^-$		
3034.3 *6*	1/2$^+$		
3045.5 *7*	11/2$^+$,9/2		
3064.5 *5*	9/2$^-$		J$^{\pi}$: *J*$^{\pi}$(exp)=9/2,11/2$^+$ in Table II of 2008Sc17.
3075.5 *9*	3/2$^+$		
3079.9 *5*			
3083.4 *14*			
3114.8 *12*			
3128.7 *5*			
3155.5 *6*			

[†] From least-squares fit to Eγ′s. Normalized χ^2=1.7, as compared to critical χ^2=1.3. Four gamma-ray energies differ from the fitted values by more than 3σ.

[‡] From DSAM (2008Sc17).

[#] From *J*$^{\pi}$(initial) in table III of 2008Sc17 based on their $\gamma(\theta)$, excitation function measurements and decay modes, unless otherwise stated.

[@] 2008Sc17 quote from literature.

[&] Level possibly deexcited by other transitions which have not been observed by 2008Sc17.

[a] Possible member of h$_{11/2}\otimes 2^+$ multiplet.

[b] Level reported by 1994De56 only.

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr)

Transitions strenghts in comments are from 2008Sc17. B(E2)(W.u.) limits were replaced by Recommnded Upper Limit (RUL=300) by the evaluator when values listed by 2008Sc17 are greater then RUL.

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[@]	Comments
145.45	7/2+	145.44 *20*	100	0.0	5/2+	E2+M1		
1117.48	11/2−	971.75 *21*	89.8 *3*	145.45	7/2+	[M2+E3]		δ: +0.17 *+9−8* or >+6.
		1117.3 *3*	10.2 *3*	0.0	5/2+	E3		
1126.82	3/2+	981.1 *3*	2.7 *1*	145.45	7/2+	E2		B(E2)(W.u.)≤2.15.
		1126.50 *21*	97.3 *1*	0.0	5/2+	E2+M1	+0.47 *6*	δ: quoted by 2008Sc17 from 1980An22 and 2001Tu02. B(M1)(μ_N^2)≤0.0132. B(E2)(W.u.)≤7.7.
1292.72	5/2+	1146.90 *22*	40.0 *5*	145.45	7/2+	E2+M1		B(M1)(μ_N^2)≤0.0039. B(E2)(W.u.)≤9.0.
		1292.53 *22*	60.0 *5*	0.0	5/2+	E2+M1		B(M1)(μ_N^2)≤0.0042. B(E2)(W.u.)≤8.2.
1298.68	1/2+	1298.44 *22*	100	0.0	5/2+	E2		B(E2)(W.u.)=10.6 *+45−24*.
1436.17	3/2+	309.36 *21*	1.5 *8*	1126.82	3/2+	E2+M1		B(M1)(μ_N^2)≤0.016. B(E2)(W.u.)≤549.
		1290.67 *24*	52.4 *8*	145.45	7/2+	E2		B(E2)(W.u.)=8.4 *+24−16*.
		1436.1 *3*	46.1 *8*	0.0	5/2+	E2+M1		B(M1)(μ_N^2)≤0.0035. B(E2)(W.u.)≤5.6.
1452.36	7/2+	1306.63 *21*	81.6 *4*	145.45	7/2+	E2+M1		δ: +0.90 *+31−20* or −29 *+7−6*. B(M1)(μ_N^2)=0.0026 *+14−12* or <0.0001. B(E2)(W.u.)=4.0 *+28−16* or 9.0 *+25−16*.
		1452.20 *24*	18.4 *4*	0.0	5/2+	E2+M1		δ: −5 *+2−6* or −0.48 *+12−26*. B(M1)(μ_N^2)<0.0001 or 0.0006 *+3−2*. B(E2)(W.u.)=1.2 *+4−3* or 0.22 *+22−12*.
1457.32	9/2+	339.15 *24*	0.9 *1*	1117.48	11/2−	E1		B(E1)(W.u.)=0.00023 *7*.
		1311.83 *22*	73.4 *4*	145.45	7/2+	E2+M1		δ: −0.053 *+22−26* or +8.9 *+17−19*. B(M1)(μ_N^2)=0.0050 *11* or 0.0001 *1*. B(E2)(W.u.)=0.03 *+5−2* or 9.6 *+22−16*.
		1457.42 *23*	25.7 *4*	0.0	5/2+	E2		B(E2)(W.u.)=2.0 *+5−4*.
1493.96	11/2+	1348.51 *22*	100	145.45	7/2+	E2		B(E2)(W.u.)=6.4 *+29−15*.
		1495.0[ae] *2*		0.0	5/2+			
1520.80	9/2+	402.87 *23*	1.8 *1*	1117.48	11/2−	E1		B(E1)(W.u.)=0.00046 *8*.
		1375.56 *25*	10.3 *3*	145.45	7/2+	E2+M1		δ: +0.26 *+13−11* or +2.2 *+7−5*. B(M1)(μ_N^2)=0.001 *2* or 0.0002 *1*. B(E2)(W.u.)=0.12 *+16−8* or 1.5 *+4−3*.
		1520.98 *22*	87.9 *3*	0.0	5/2+	E2		B(E2)(W.u.)=9.4 *+11−9*.
1580.06	5/2(−)	287.06 *22*	2.2 *1*	1292.72	5/2+	E1		B(E1)(W.u.)=0.0011 *3*.

$^{141}_{59}Pr_{82}$-4

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[@]	Comments
1580.06	5/2$^{(-)}$	1434.54 *25*	72.0 *5*	145.45	7/2$^+$	E1		B(E1)(W.u.)=0.00028 *6*.
		1580.06 *25*	25.8 *5*	0.0	5/2$^+$	E1		B(E1)(W.u.)=0.000074 *8*.
1608.38	3/2$^+$	1608.20 *23*	100	0.0	5/2$^+$	E2+M1		B(M1)(μ_N^2)≤0.0854. B(E2)(W.u.)≤109.5.
1651.02	7/2$^+$	532.6[ae] *2*		1117.48	11/2$^-$			
		1506.1 *3*	7.9 *2*	145.45	7/2$^+$	E2+M1		δ: −0.23 *6* or <−7.9. B(M1)(μ_N^2)=0.0007 *1* or <0.0001. B(E2)(W.u.)=0.05 *4* or 1.00 *+18−15*.
		1651.39 *23*	92.1 *2*	0.0	5/2$^+$	E2		B(E2)(W.u.)=7.4 *+11−9*.
1657.05	1/2$^+$	358.17 *23*	7.9 *4*	1298.68	1/2$^+$			Mult.: E2 listed by 2008Sc17 is incorrect in view of 1/2$^+$ to 1/2$^+$ transition. Final J^π should be 1/2$^+$, not 5/2$^+$ as in table III of 2008Sc17.
		530.03 *21*	47.5 *8*	1126.82	3/2$^+$	[M1+E2]		B(M1)(μ_N^2)≤0.0195. B(E2)(W.u.)≤224.
		1513.2[ae] *2*		145.45	7/2$^+$			
		1657.5 *3*	44.6 *8*	0.0	5/2$^+$	E2		B(E2)(W.u.)≤0.70.
1767.07	13/2$^+$	273.38 *21*	18.8 *7*	1493.96	11/2$^+$	E2+M1	−0.07 *+8−7*	B(M1)(μ_N^2)≤0.101. B(E2)(W.u.)≤21.2.
		649.62 *21*	81.2 *7*	1117.48	11/2$^-$	E1		B(E1)(W.u.)≤0.0020.
1786.50	(5/2,7/2)$^+$	494.6[b] *3*		1292.72	5/2$^+$			
		658.8 *3*	3.2 *2*	1126.82	3/2$^+$	E2+M1		B(M1)(μ_N^2)≤0.0031. B(E2)(W.u.)≤23.
		1640.9 *3*	30.8 *6*	145.45	7/2$^+$	E2+M1		B(M1)(μ_N^2)≤0.0019. B(E2)(W.u.)≤2.3.
		1786.40 *25*	66.0 *7*	0.0	5/2$^+$	E2+M1		B(M1)(μ_N^2)≤0.0031. B(E2)(W.u.)≤3.1.
1796.1	15/2$^+$	301.9 *3*	100	1493.96	11/2$^+$	E2		
1812.36	9/2$^+$	359.74 *22*	9.1 *4*	1452.36	7/2$^+$	E2+M1		δ: +0.11 *13* or +3.5 *+28−12*. B(M1)(μ_N^2)=0.010 *7* or 0.0007 *+18−6*. B(E2)(W.u.)=2.8 *+19−3* or 225 *+170−87*.
		1667.13 *24*	59.5 *8*	145.45	7/2$^+$	E2+M1		δ: +0.25 *4* or +2.3 *+4−3*. B(M1)(μ_N^2)=0.0006 *4* or 0.0001 *1*. B(E2)(W.u.)=0.04 *+5−2* or 0.63 *+44−20*.
		1812.7 *3*	31.4 *7*	0.0	5/2$^+$	E2		B(E2)(W.u.)=0.26 *+17−26*.
1842.11	7/2$^+$	384.8 *3*	1.2 *2*	1457.32	9/2$^+$	E2+M1		B(M1)(μ_N^2)≤0.0019. B(E2)(W.u.)≤44.
		389.8 *3*	0.9 *2*	1452.36	7/2$^+$	E2+M1		B(M1)(μ_N^2)≤0.0015. B(E2)(W.u.)≤32.
		543.6[b] *4*		1298.68	1/2$^+$			
		1696.6 *3*	34.6 *7*	145.45	7/2$^+$	E2+M1		δ: +0.52 *+28−21* or −2.8 *+1−4*.

$^{141}_{59}Pr_{82}$-5

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ [†‡]	I_γ [#]	E_f	J_f^π	Mult. [@]	Comments
							B(M1)(μ_N^2)=0.0003 *2* or <0.0001. B(E2)(W.u.)=0.10 *+12−7* or 0.41 *+26−15*.
1842.11	7/2$^+$	1842.1 *3*	63.4 *7*	0.0	5/2$^+$	E2+M1	*δ*: −0.57 *+16−23* or −4.6 *+17−44*. B(M1)(μ_N^2)=0.0004 *3* or <0.0001. B(E2)(W.u.)=0.14 *+17−8* or 0.44 *+36−6*.
1853.70	11/2$^+$	332.66 *22*	1 *1*	1520.80	9/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0039. B(E2)(W.u.)≤115.
		396.51 *25*	5.9 *4*	1457.32	9/2$^+$	E2+M1	*δ*: −0.31 *+14−16* or −5 *+2−11*. B(M1)(μ_N^2)=0.005 *4* or 0.0002 *+7−2*. B(E2)(W.u.)=9 *+24−8* or 100 *+86−42*.
		559.7[b] *6*		1292.72	5/2$^+$		
		1708.7 *3*	93.8 *4*	145.45	7/2$^+$	E2	B(E2)(W.u.)=1.1 *+8−3*.
		1853.8[b] *8*		0.0	5/2$^+$		
1910.28?		1764.5[ae] *2*	*c*	145.45	7/2$^+$		
		1910.5[ae] *2*	*c*	0.0	5/2$^+$		
1975.27	3/2$^+$	394.52 *25*	1.5 *5*	1580.06	5/2$^{(-)}$	E1	B(E1)(W.u.)=0.00016 *+11−10*.
		523.0 *3*	6.9 *4*	1452.36	7/2$^+$	E2	B(E2)(W.u.)=60 *+24−23*.
		848.6 *3*	27.0 *7*	1126.82	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0062. B(E2)(W.u.)≤28.5.
		1830.0 *6*	23.6 *6*	145.45	7/2$^+$	E2	B(E2)(W.u.)=0.39 *14*.
		1976.0 *5*	41.0 *8*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0007. B(E2)(W.u.)≤0.63.
1985.93	13/2$^+$	218.67 *22*	6.1 *8*	1767.07	13/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.062. B(E2)(W.u.)≤300.
		465.41 *25*	12.2 *8*	1520.80	9/2$^+$	E2	B(E2)(W.u.)≤187.
		868.4 *3*	81.8 *11*	1117.48	11/2$^-$	E1	B(E1)(W.u.)≤0.00076.
2000.07	13/2$^-$	882.59 *21*	100	1117.48	11/2$^-$	E2+M1	*δ*: +0.01 *+62−4* or +10 *+11−4*. B(M1)(μ_N^2)=0.043 *+24−20* or 0.0004 *+12−4*. B(E2)(W.u.)<1.1 or 182 *+104−85*.
2000.47	9/2$^-$	349.58 *25*	2.3 *2*	1651.02	7/2$^+$	E1	B(E1)(W.u.)=0.00062 *56*. Final J^π of 9/2$^+$ as in table III of 2008Sc17 is inconsistent with 7/2$^+$ listed as initial J^π for 1651.3 level.
		542.8 *3*	3.4 *2*	1457.32	9/2$^+$	E1	B(E1)(W.u.)=0.24 *18*.
		548.1 *3*	19.3 *16*	1452.36	7/2$^+$	E1	B(E1)(W.u.)=0.0013 *6*.
		883.1[b] *3*		1117.48	11/2$^-$		
		1855.2 *6*	75.0 *2*	145.45	7/2$^+$	E1	B(E1)(W.u.)=0.00013 *6*.
2003.71	11/2$^+$	545.7 *3*	3 *3*	1457.32	9/2$^+$	E2+M1	*δ*: −0.40 *+19−21* or −4 *+2−9*. B(M1)(μ_N^2)=0.0009 *8* or 0.0001 *+3−1*. B(E2)(W.u.)=1.5 *+45−15* or 10 *8*.
		1858.2 *7*	97.0 *3*	145.45	7/2$^+$	E2	B(E2)(W.u.)=0.8 *5*.

$^{141}_{59}Pr_{82}$-6

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2018.13	3/2$^+$	438.27 *25*	4.8 *4*	1580.06	5/2$^{(-)}$	E1	B(E1)(W.u.)=0.00036 *18*.
		565.1[ae] *2*		1452.36	7/2$^+$		
		719.5 *3*	8.8 *6*	1298.68	1/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0034. B(E2)(W.u.)≤22.2.
		725.2 *3*	2.8 *5*	1292.72	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0011. B(E2)(W.u.)≤7.3.
		1872.1 *4*	28.4 *8*	145.45	7/2$^+$	E2	B(E2)(W.u.)=0.40 *18*.
		2017.5 *4*	55.2 *9*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.001. B(E2)(W.u.)≤0.78.
2045.11	9/2$^+$	465.2[b] *4*		1580.06	5/2$^{(-)}$		
		524.1[b] *4*		1520.80	9/2$^+$		
		1900.01 *22*	100	145.45	7/2$^+$	E2+M1	*δ*: −0.49 *+6−8* or −3.4 *+6−8*. B(M1)(μ_N^2)=0.0007 *4* or 0.0001 *1*. B(E2)(W.u.)=0.15 *+15−10* or 0.71 *+45−41*.
2075.54	5/2$^+$,7/2$^+$	425.19[d] *22*	2.7 *4*	1651.02	7/2$^+$	E2+M1	Final J^π of 7/2,9/2$^+$ as in table III of 2008Sc17 is inconsistent with 7/2$^+$ listed as initial J^π for 1651.3 level. B(M1)(μ_N^2)≤0.0096. B(E2)(W.u.)≤176.
		495.27 *22*	4.5 *4*	1580.06	5/2$^{(-)}$	E1	B(E1)(W.u.)=0.00043 *18*.
		623.02 *22*	6.5 *5*	1452.36	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.007. B(E2)(W.u.)≤59.
		782.8 *3*	12.3 *6*	1292.72	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0065. B(E2)(W.u.)≤35.2.
		948.6 *3*	38.3 *8*	1126.82	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.011. B(E2)(W.u.)≤42.
		1929.7 *4*	21.6 *7*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0008. B(E2)(W.u.)≤0.67.
		2075.1 *5*	14.1 *6*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0004. B(E2)(W.u.)≤0.30.
2100.9	3/2$^+$	664.4 *3*	10.8 *6*	1436.17	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.012. B(E2)(W.u.)≤90.
		974.4 *5*	78.6 *11*	1126.82	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.027. B(E2)(W.u.)≤94.
		2102.0 *6*	10.6 *10*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0004. B(E2)(W.u.)≤0.29.
2105.02	5/2$^-$	525.3 *3*	4.1 *5*	1580.06	5/2$^{(-)}$	E2+M1	B(M1)(μ_N^2)≤0.017. B(E2)(W.u.)≤197.
		652.7 *3*	12.4 *5*	1452.36	7/2$^+$	E1	B(E1)(W.u.)=0.00128 *24*.
		1959.4 *4*	49.8 *9*	145.45	7/2$^+$	E1	B(E1)(W.u.)=0.00019 *3*.

$^{141}_{59}Pr_{82}$-7

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†][‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2105.02	5/2⁻	2104.9 *5*	33.6 *9*	0.0	5/2⁺	E1	B(E1)(W.u.)=0.000104 *18*.
2105.3	15/2⁻	987.8 *3*	100	1117.48	11/2⁻	E2	B(E2)(W.u.)=92 *+95−70*.
2107.73	15/2⁺	311.43 *23*	65.2 *25*	1796.1	15/2⁺	E2+M1	B(M1)(μ_N^2)<3.1. B(E2)(W.u.)<300.
		340.85 *25*	34.8 *25*	1767.07	13/2⁺	E2+M1	B(M1)(μ_N^2)<1.3. B(E2)(W.u.)<300.
2126.01	11/2⁺	272.28 *22*	18.1 *24*	1853.70	11/2⁺	E2+M1	B(M1)(μ_N^2)<0.55. B(E2)(W.u.)<300.
		604.9 *3*	11.0 *12*	1520.80	9/2⁺	E2+M1	B(M1)(μ_N^2)<0.031. B(E2)(W.u.)<273.
		631.8 *3*	11.4 *11*	1493.96	11/2⁺	E2+M1	B(M1)(μ_N^2)<0.027. B(E2)(W.u.)<226.
		669	24.5	1457.32	9/2⁺	E2+M1	I_γ: this γ ray is not resolved by 2008Sc17 due to a background line, the branching ratio has been taken by the authors from 2001Tu02. B(M1)(μ_N^2)<0.049. B(E2)(W.u.)<365.
		1008.8 *3*	26.6 *17*	1117.48	11/2⁻	E1	B(E1)(W.u.)<0.00097.
		1981.4 *5*	8.4 *11*	145.45	7/2⁺	E2	B(E2)(W.u.)<0.55.
2135.49	7/2⁻	678.3 *3*	16.2 *6*	1457.32	9/2⁺	E1	B(E1)(W.u.)=0.00049 *17*.
		682.9 *4*	3.0 *6*	1452.36	7/2⁺	E1	B(E1)(W.u.)=0.00009 *5*.
		1990.0 *5*	21.2 *8*	145.45	7/2⁺	E1	B(E1)(W.u.)=0.000025 *9*.
		2135.5 *5*	59.6 *10*	0.0	5/2⁺	E1	B(E1)(W.u.)=0.000057 *19*.
2154.5		855.2[ae] *2*		1298.68	1/2⁺		
		861.8[b] *3*		1292.72	5/2⁺		
2172.0	9/2⁻	520.9 *3*	8.0 *6*	1651.02	7/2⁺	E1	B(E1)(W.u.)=0.0014 *3*. Final J^π of 9/2⁺ as in table III of 2008Sc17 is inconsistent with 7/2⁺ listed as initial J^π for 1651.3 level.
		2026.6 *4*	92.0 *6*	145.45	7/2⁺	E1	B(E1)(W.u.)=0.00027 *5*.
2188.16	3/2⁺	736.0 *3*	25.3 *11*	1452.36	7/2⁺	E2	B(E2)(W.u.)=59 *34*.
		751.9 *3*	19.8 *9*	1436.17	3/2⁺	E2+M1	B(M1)(μ_N^2)≤0.000011. B(E2)(W.u.)≤66.
		2042.5 *5*	41.3 *12*	145.45	7/2⁺	E2	B(E2)(W.u.)=0.6 *3*.
		2188.0 *6*	13.6 *13*	0.0	5/2⁺	E2+M1	B(M1)(μ_N^2)≤0.0003. B(E2)(W.u.)≤0.23.
2190.37	1/2⁻	897.6[b] *2*		1292.72	5/2⁺		
		2044.7 *7*	6.5 *27*	145.45	7/2⁺	E3	
		2190.8 *5*	93.5 *27*	0.0	5/2⁺	M2	
2205.91	11/2⁺	352.7 *3*	3.4 *7*	1853.70	11/2⁺	E2+M1	
		752.7[b] *5*		1452.36	7/2⁺		
		2060.6 *4*	96.6 *7*	145.45	7/2⁺	E2	

$^{141}_{59}Pr_{82}$-8

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2228.84	7/2$^+$	386.95 *25*	3.9 *8*	1842.11	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.008. B(E2)(W.u.)≤177.
		649.0 *3*	44 *16*	1580.06	5/2$^{(-)}$	E1	B(E1)(W.u.)=0.00056 *7*.
		776.62 *25*	3.5 *7*	1452.36	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0009. B(E2)(W.u.)≤4.9.
		935.8 *3*	3.5 *8*	1292.72	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0005. B(E2)(W.u.)≤1.9.
		2082.8 *5*	22.9 *12*	145.45	7/2$^+$	E2+M1	δ: −0.37 *+11−12* or −5 *+2−5*. B(M1)(μ_N^2)=0.0001 *1* or <0.0001. B(E2)(W.u.)=0.01 *+3−1* or 0.10 *10*.
		2228.2 *5*	16.7 *11*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0002. B(E2)(W.u.)≤0.12.
2230.3?		736.3[b] *3*		1493.96	11/2$^+$		
2243.1?		749.1[b] *4*		1493.96	11/2$^+$		
2247.7	5/2$^-$	1120.9 *4*	11.1 *16*	1126.82	3/2$^+$	E1	B(E1)(W.u.)=0.00013 *5*.
		2247.6 *5*	88.9 *16*	0.0	5/2$^+$	E1	B(E1)(W.u.)=0.00013 *3*.
2254.0?		2254.0[ae] *18*		0.0	5/2$^+$		
2264.50	3/2$^+$	684.8 *3*	5.9 *11*	1580.06	5/2$^{(-)}$	E1	B(E1)(W.u.)=0.00026 *15*.
		812.4 *4*	4.8 *14*	1452.36	7/2$^+$	E2	B(E2)(W.u.)=10 *7*.
		828.1 *3*	9 *2*	1436.17	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0057. B(E2)(W.u.)≤28.
		965.9 *4*	8.5 *13*	1298.68	1/2$^+$	E2+M1	Final J^π of 5/2$^+$ as in table III of 2008Sc17 is inconsistent with 1/2$^+$ listed as initial J^π for 1298.4 level. B(M1)(μ_N^2)≤0.0033. B(E2)(W.u.)≤11.6.
		2118.6 *5*	49.1 *18*	145.45	7/2$^+$	E2	B(E2)(W.u.)=0.9 *4*.
		2264.0 *5*	24.2 *17*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0007. B(E2)(W.u.)≤0.44.
2267.21	1/2$^+$	291.65 *25*	6 *5*	1975.27	3/2$^+$	E2+M1	B(M1)(μ_N^2)<0.097. B(E2)(W.u.)<300.
		975.0[b] *3*		1292.72	5/2$^+$		
		2267.1 *3*	94 *5*	0.0	5/2$^+$	E2	B(E2)(W.u.)<1.17.
2302.6	9/2$^+$	1009.2[b] *4*		1292.72	5/2$^+$		
		2158.3 *5*	100	145.45	7/2$^+$	E2+M1	δ: −0.16 *+31−23* or <−7.9. B(M1)(μ_N^2)=0.0015 *7* or <0.0001. B(E2)(W.u.)=0.06 *+8−4* or 1.1 *4*.
2315.66	5/2$^+$,7/2$^+$	1022.9 *3*	40.8 *12*	1292.72	5/2$^+$	E2+M1	I_γ: 40.(12) quoted by 2008Sc17 looks like a typographical error. The value given here was calculated by evaluator from 100−(summed branches for other transitions). B(M1)(μ_N^2)≤0.0145. B(E2)(W.u.)≤45.9.

$^{141}_{59}Pr_{82}$-9

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†][‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2315.66	5/2$^+$,7/2$^+$	2169.9 *5*	16.6 *8*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0006. B(E2)(W.u.)≤0.45.
		2315.7 *5*	42.6 *13*	0.0	5/2$^+$		B(M1)(μ_N^2)≤0.0013. B(E2)(W.u.)≤0.81.
2336.40	(15/2$^-$)	816.03 *25*	45 *6*	1520.80	9/2$^+$	E3	
		1218.3 *3*	56 *6*	1117.48	11/2$^-$	E2	B(E2)(W.u.)<105.
2345.84	9/2$^+$	559.0 *3*	12.8 *10*	1786.50	(5/2,7/2)$^+$	E2+M1	B(M1)(μ_N^2)≤0.024. B(E2)(W.u.)≤248.
		851.76 *23*	16.6 *11*	1493.96	11/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0085. B(E2)(W.u.)≤39.
		1052.6 *3*	22.6 *13*	1292.72	5/2$^+$	E2	B(E2)(W.u.)=11 *7*.
		1229.8[d] *3*	9.2 *18*	1117.48	11/2$^-$	E1	B(E1)(W.u.)=0.00006 *5*.
		2199.5 *6*	13.8 *12*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0004. B(E2)(W.u.)≤0.29.
		2345.1 *6*	25.0 *14*	0.0	5/2$^+$	E2	B(E2)(W.u.)=0.22 *15*.
2353.7?		2353.7[ae] *19*		0.0	5/2$^+$		
2362.93	5/2$^-$	754.64 *24*	9.4 *8*	1608.38	3/2$^+$	E1	B(E1)(W.u.)=0.0014 *5*.
		1064.4 *4*	8.8 *15*	1298.68	1/2$^+$	[M2]	Mult.: E1 listed by 2008Sc17 is inconsistent with 5/2$^-$ to 1/2$^+$ transition. Final J^π of 5/2$^+$ as in table III of 2008Sc17 is inconsistent with 1/2$^+$ listed as initial J^π for 1298.4 level.
		1235.7 *3*	57.2 *17*	1126.82	3/2$^+$	E1	B(E1)(W.u.)=0.0020 *6*.
		2217.0 *6*	7.1 *8*	145.45	7/2$^+$	E1	B(E1)(W.u.)=0.000042 *16*.
		2362.5 *6*	17.5 *11*	0.0	5/2$^+$	E1	B(E1)(W.u.)=0.00009 *3*.
2364.84?		1237.9[ae] *2*		1126.82	3/2$^+$		
		1246.7[ae] *2*		1117.48	11/2$^-$		
2382.1	9/2$^-$	861.3 *3*	72.4 *12*	1520.80	9/2$^+$	E1	B(E1)(W.u.)=0.0012 *7*.
		1264.5 *4*	27.6 *12*	1117.48	11/2$^-$	E2+M1	B(M1)(μ_N^2)≤0.0036. B(E2)(W.u.)≤7.5.
2399.30?		1281.3[ae] *2*		1117.48	11/2$^-$		
2403.11	9/2$^+$	945.8 *3*	25.7 *11*	1457.32	9/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0042. B(E2)(W.u.)≤15.6.
		2257.5 *5*	14.7 *10*	145.45	7/2$^+$	E2+M1	δ: −0.40 *+22−41* or <−1.8. B(M1)(μ_N^2)=0.0001 *1* or <0.0001. B(E2)(W.u.)=0.01 *+4−1* or 0.06 *+7−5*.
		2403.2 *5*	59.5 *14*	0.0	5/2$^+$	E2	B(E2)(W.u.)=0.06 *+7−5*.
2419.8	9/2$^+$	925.9 *3*	18.7 *19*	1493.96	11/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0039. B(E2)(W.u.)≤15.2.
		2274.2 *6*	48 *4*	145.45	7/2$^+$	E2+M1	δ: +0.4 *+20−2* or +1.6 *+8−13*. B(M1)(μ_N^2)=0.0003 *3* or 0.0001 *+5−1*. B(E2)(W.u.)<0.35 0R 0.16 *+21−16*.
		2419.9 *6*	33 *6*	0.0	5/2$^+$	E2	B(E2)(W.u.)<0.23.

$^{141}_{59}Pr_{82}$-10

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[@]	Comments
2453.1	5/2⁻	1326.4 *3*	8 *7*	1126.82	3/2⁺	E1		B(E1)(W.u.)=0.0005 *5*.
		2452.7 *6*	92 *7*	0.0	5/2⁺	E1		B(E1)(W.u.)=0.00083 *21*.
2453.99	15/2⁺	449.91 *22*	39 *3*	2003.71	11/2⁺	E2		B(E2)(W.u.)<300.
		687.32 *23*	61 *3*	1767.07	13/2⁺	E2+M1	−0.26 *+14−15*	B(M1)(μ_N^2)<0.082. B(E2)(W.u.)<83.
2461.87	5/2⁺	810.5 *3*	13.7 *13*	1651.02	7/2⁺	E2+M1		B(M1)(μ_N^2)≤0.012. B(E2)(W.u.)≤54.
		1026.2 *4*	12.6 *12*	1436.17	3/2⁺	E2+M1		B(M1)(μ_N^2)≤0.0048. B(E2)(W.u.)≤15.1.
		1335.0 *4*	14.6 *12*	1126.82	3/2⁺	E2+M1		B(M1)(μ_N^2)≤0.0025. B(E2)(W.u.)≤4.7.
		2462.2 *6*	59.2 *19*	0.0	5/2⁺	E2+M1		B(M1)(μ_N^2)≤0.0016. B(E2)(W.u.)≤0.85.
2473.2?	1/2⁻	368.16 *21*	100	2105.02	5/2⁻	E2		B(E2)(W.u.)<300. Final level energy should be 2104.9, not 2105.0 as in table III of 2008Sc17.
2499.10?		1381.1[ae] *2*		1117.48	11/2⁻			
2499.76	9/2⁺	1046.5 *4*	16.4 *12*	1452.36	7/2⁺	E2+M1		δ: +0.22 *+47−22* or +2.4 *+29−13*. B(M1)(μ_N^2)=0.005 *+2−3* or 0.0008 *+25−8*. B(E2)(W.u.)<60 or 14 *+7−8*.
		2354.8 *3*	83.6 *12*	145.45	7/2⁺	E2+M1		δ: +0.06 *8* or +4.1 *+16−11*. B(M1)(μ_N^2)=0.0025 *6* or 0.0001 *+2−1*. B(E2)(W.u.)=0.01 *3*−1 or 1.4 *4*.
2520.16	3/2⁺	501.5 *3*	16.1 *22*	2018.13	3/2⁺	E2+M1		B(M1)(μ_N^2)≤0.064. B(E2)(W.u.)<300.
		1085.0 *4*	18.8 *29*	1436.17	3/2⁺	E2+M1		B(M1)(μ_N^2)≤0.0074. B(E2)(W.u.)≤20.8.
		1227.3 *4*	19.8 *27*	1292.72	5/2⁺	E2+M1		B(M1)(μ_N^2)≤0.0054. B(E2)(W.u.)≤11.8.
		2374.6 *7*	25.8 *27*	145.45	7/2⁺	E2		B(E2)(W.u.)=0.2 *+3−2*.
		2520.7 *9*	19.5 *25*	0.0	5/2⁺	E2+M1		B(M1)(μ_N^2)≤0.0006. B(E2)(W.u.)≤0.31.
2563.9	7/2⁻	2418.0 *9*	33 *5*	145.45	7/2⁺	E1		B(E1)(W.u.)=0.00011 *3*.
		2564.1 *7*	67 *5*	0.0	5/2⁺	E1		B(E1)(W.u.)=0.00018 *5*.
2580.69	11/2⁺	536.0 *3*	18 *3*	2045.11	9/2⁺	E2+M1		B(M1)(μ_N^2)<0.41. B(E2)(W.u.)<300.
		726.7 *3*	12 *3*	1853.70	11/2⁺	E2+M1		B(M1)(μ_N^2)<0.12. B(E2)(W.u.)<734.
		1122.9 *4*	34 *6*	1457.32	9/2⁺	E2+M1		B(M1)(μ_N^2)<0.084. B(E2)(W.u.)<220.

$^{141}_{59}Pr_{82}$-11

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2580.69	11/2$^+$	2435.30 *25*	36 *7*	145.45	7/2$^+$	E2	B(E2)(W.u.)<5.0.
2583.0	7/2$^-$	2437.2 *8*	33.5 *4*	145.45	7/2$^+$	E1	B(E1)(W.u.)=0.00024 *+7−6*.
		2583.3 *7*	66.5 *4*	0.0	5/2$^+$	E1	B(E1)(W.u.)=0.00040 *+12−9*.
2601.2	5/2$^-$,7/2$^-$	2455.7 *7*	29 *5*	145.45	7/2$^+$	E1	B(E1)(W.u.)=0.00008 *+6−5*.
		2601.3 *8*	71 *5*	0.0	5/2$^+$	E1	B(E1)(W.u.)=0.00017 *+10−8*.
2603.7	5/2$^-$,7/2$^-$	2458.7 *7*	20.0 *24*	145.45	7/2$^+$	E1	B(E1)(W.u.)=0.00012 *+7−5*.
		2603.1 *8*	80.0 *24*	0.0	5/2$^+$	E1	B(E1)(W.u.)=0.00041 *+21−14*.
2607.1	1/2$^+$	2607.1 *8*	100	0.0	5/2$^+$	E2	B(E2)(W.u.)=0.9 *+5−4*.
2611.7	9/2$^+$	1318.6 *5*	12.5 *15*	1292.72	5/2$^+$	E2	B(E2)(W.u.)=14 *4*.
		2612.4 *7*	87.5 *15*	0.0	5/2$^+$	E2	B(E2)(W.u.)=3.2 *6*.
2623.2	(5/2,7/2)$^+$	1330.3 *5*	16.8 *24*	1292.72	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0054. B(E2)(W.u.)≤10.1.
		2477.7 *7*	40.0 *24*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0018. B(E2)(W.u.)≤1.01.
		2623.8 *8*	43 *3*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0017. B(E2)(W.u.)≤0.82.
2646.4	9/2$^+$	2500.6 *7*	46 *3*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0017. B(E2)(W.u.)≤0.88.
		2646.9 *8*	54 *3*	0.0	5/2$^+$	E2	B(E2)(W.u.)=0.61 *17*.
2659.6	11/2$^+$	2514.1 *8*	100	145.45	7/2$^+$	E2	B(E2)(W.u.)<0.83.
2668.96	13/2$^-$	1175.2 *3*	13.3 *20*	1493.96	11/2$^+$	E1	B(E1)(W.u.)=0.0005 *3*.
		1216.4 *4*	22 *3*	1452.36	7/2$^+$	E3	
		1551.3 *4*	65 *3*	1117.48	11/2$^-$	E2+M1	δ: −0.18 *8* or <−4.9. B(M1)(μ_N^2)=0.016 *+9−7* or 0.0002 *+8−2*. B(E2)(W.u.)=0.7 *+14−6* or 22 *+12−9*.
2682.99	(5/2,7/2)$^+$	870.9 *4*	12.5 *14*	1812.36	9/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0057. B(E2)(W.u.)≤24.9.
		1246.1 *5*	6.7 *12*	1436.17	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0011. B(E2)(W.u.)≤2.3.
		1556.3 *4*	49.1 *19*	1126.82	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0037. B(E2)(W.u.)≤5.1.
		2537.5 *11*	4.9 *11*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0002. B(E2)(W.u.)≤0.05.
		2683.2 *8*	26.8 *21*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0004. B(E2)(W.u.)≤0.18.
2707.7	15/2$^-$	1590.2 *4*	100	1117.48	11/2$^-$	E2	B(E2)(W.u.)=31 *+66−23*.
2710.0	3/2$^+$	1411.3 *3*	45 *9*	1298.68	1/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0085. B(E2)(W.u.)≤14.0. Final J^π of 5/2$^+$ as in table III of 2008Sc17 is inconsistent with 1/2$^+$ listed as initial J^π for 1298.4 level.
		1583.3 *4*	55 *9*	1126.82	3/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0072. B(E2)(W.u.)≤9.6.

$^{141}_{59}Pr_{82}$-12

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2718.4	(9/2,11/2)	1197.5 *4*	68.0 *25*	1520.80	9/2$^+$		
		1601.1 *5*	32.0 *25*	1117.48	11/2$^-$		B(E1)(W.u.)<0.00012. B(M1)(μ_N^2)<0.0019. B(E2)(W.u.)<2.5.
2722.4	3/2$^+$	1271.6[d] *5*	15 *10*	1452.36	7/2$^+$	E2	B(E2)(W.u.)=13 *+13−12*.
		1422.4 *6*	10 *10*	1298.68	1/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0072. B(E2)(W.u.)≤11.8.
		2576.0 *9*	25 *10*	145.45	7/2$^+$	E2	B(E2)(W.u.)=0.7 *5*.
		2721.5 *8*	50 *10*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0034. B(E2)(W.u.)≤1.52.
2731.4	9/2$^+$	877.5 *4*	3 *3*	1853.70	11/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0076. B(E2)(W.u.)≤32.5.
		1278.7 *5*	22 *10*	1452.36	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.014. B(E2)(W.u.)≤27.8.
		2586.6 *8*	50 *10*	145.45	7/2$^+$	E2+M1	δ: −0.04 *+16−14* or +7 *+57−4*. B(M1)(μ_N^2)=0.0021 *12* or <0.0001. B(E2)(W.u.)<0.01 or 1.0 *6*.
		2732.1 *8*	25 *10*	0.0	5/2$^+$	E2	B(E2)(W.u.)=0.4 *3*.
2739.7	1/2$^-$	1159.6 *3*	100	1580.06	5/2$^{(-)}$	E2	B(E2)(W.u.)<72.
2777.5	9/2	923.8 *4*	17.0 *23*	1853.70	11/2$^+$		
		2631.9 *8*	83.0 *23*	145.45	7/2$^+$	D+Q	δ: +0.06 *+10−9* or +4.1 *+29−12*.
2782.4	(5/2,7/2)$^+$	2637.4 *8*	66 *3*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0014. B(E2)(W.u.)≤0.66.
		2781.8 *9*	34 *3*	0.0	5/2$^+$	E2+M1	E_γ: 781.84 in tables II and III of 2008Sc17 seems a misprint. B(M1)(μ_N^2)≤0.0006. B(E2)(W.u.)≤0.27.
2782.7	13/2$^+$	576.93 *25*	33 *15*	2205.91	11/2$^+$	E2+M1	B(M1)(μ_N^2)<0.20. B(E2)(W.u.)<300.
		1261.1 *5*	67 *15*	1520.80	9/2$^+$	E2	B(E2)(W.u.)<66.
2801.80	9/2$^+$	1151.2 *5*	37 *3*	1651.02	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.015. B(E2)(W.u.)≤38. Final J^π of 9/2$^+$ as in table III of 2008Sc17 is inconsistent with 7/2$^+$ listed as initial J^π for 1651.3 level.
		2656.0 *4*	34 *3*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0011. B(E2)(W.u.)≤0.52.
		2801.8 *3*	29 *3*	0.0	5/2$^+$	E2	B(E2)(W.u.)=0.19 *16*.
2807.18	3/2$^+$,5/2$^-$	491.4 *3*	8 *8*	2315.66	5/2$^+$,7/2$^+$		B(E2)(W.u.)≤300. Final J^π of 5/2$^+$ as in table III of 2008Sc17 is inconsistent with 5/2$^+$,7/2$^+$ listed as initial J^π for 2315.5 level.

$^{141}_{59}Pr_{82}$-13

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2807.18	$3/2^+,5/2^-$	2662.0 *4*	45 *10*	145.45	$7/2^+$		
		2807.13 *22*	47 *10*	0.0	$5/2^+$		B(E2)(W.u.)≤1.13.
2810.72	$1/2^+$	1201.1 *5*	46 *7*	1608.38	$3/2^+$	E2+M1	B(M1)(μ_N^2)<0.016. B(E2)(W.u.)<36.
		2810.95 *23*	54 *7*	0.0	$5/2^+$	E2	B(E2)(W.u.)<0.59.
2814.0	$1/2^-$	1233.1 *4*	46 *7*	1580.06	$5/2^{(-)}$	E2	B(E2)(W.u.)=90 *+103−60*.
		1687.7 *3*	54 *7*	1126.82	$3/2^+$	E1	B(E1)(W.u.)=0.0012 *+17−7*.
2837.5	$(5/2,7/2)^-$	2692.0 *9*	75 *4*	145.45	$7/2^+$	E1	B(E1)(W.u.)=0.0004 *3*.
		2837.5 *11*	25 *4*	0.0	$5/2^+$	E1	B(E1)(W.u.)=0.00012 *+9−6*.
2839.7	$9/2^-$	2694.2 *4*	100	145.45	$7/2^+$	E1	B(E1)(W.u.)=0.00023 *+16−11*.
2844.6	$3/2^-$	1186.8 *5*	25 *15*	1657.05	$1/2^+$	E1	B(E1)(W.u.)=0.0008 *+17−10*.
		1546.6 *6*	25 *15*	1298.68	$1/2^+$	E1	Final J^π of $5/2^+$ as in table III of 2008Sc17 is inconsistent with $1/2^+$ listed as initial J^π for 1298.4 level. B(E1)(W.u.)=0.0004 *+8−5*.
		2846.2 *11*	50 *20*	0.0	$5/2^+$	E1	B(E1)(W.u.)=0.00012 *+22−13*.
2847.5	$9/2^+$	1005.0 *4*	36 *4*	1842.11	$7/2^+$	E2+M1	*δ*: +0.20 *+43−23* or +2.5 *+45−15*. B(M1)(μ_N^2)<0.016 or <0.0005. B(E2)(W.u.)<3.1 or <51.
		1354.0 *5*	18 *3*	1493.96	$11/2^+$	E2+M1	B(M1)(μ_N^2)<0.0034. B(E2)(W.u.)<6.1.
		1389.9 *6*	15 *3*	1457.32	$9/2^+$	E2+M1	B(M1)(μ_N^2)<0.0027. B(E2)(W.u.)<4.6.
		2702.8 *12*	11.8 *23*	145.45	$7/2^+$	E2+M1	B(M1)(μ_N^2)<0.0003. B(E2)(W.u.)<0.13.
		2848.4 *11*	19 *6*	0.0	$5/2^+$	E2	B(E2)(W.u.)<0.19.
2863.4		1570.9 *6*	67 *20*	1292.72	$5/2^+$		
		2716.8 *15*	33 *20*	145.45	$7/2^+$		
2881.6	$7/2^+,9/2^+$	1028.0 *5*	24 *11*	1853.70	$11/2^+$	E2+M1	B(M1)(μ_N^2)<0.023. B(E2)(W.u.)<71.
		1424.5 *8*	26 *13*	1457.32	$9/2^+$	E2+M1	B(M1)(μ_N^2)<0.0096. B(E2)(W.u.)<15.8.
		1428.5 *6*	21 *5*	1452.36	$7/2^+$	E2+M1	B(M1)(μ_N^2)<0.0066. B(E2)(W.u.)<10.7.
		2737.0 *16*	8 *4*	145.45	$7/2^+$	E2+M1	B(M1)(μ_N^2)<0.0004. B(E2)(W.u.)<0.19.
		2882.3 *11*	21 *4*	0.0	$5/2^+$	E2+M1	B(M1)(μ_N^2)<0.0001. B(E2)(W.u.)<0.31.
2887.4	$(9/2,11/2^+)$	1075.2 *5*	24 *6*	1812.36	$9/2^+$		
		1367.0 *4*	28 *6*	1520.80	$9/2^+$		
		1392.8 *5*	23 *6*	1493.96	$11/2^+$		
		1769.6 *6*	17 *10*	1117.48	$11/2^-$		

$^{141}_{59}Pr_{82}$-14

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†‡]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2887.4	(9/2,11/2$^+$)	2742.5 *17*	9 *3*	145.45	7/2$^+$		
2896.8	11/2$^+$	1439.0 *8*	29 *10*	1457.32	9/2$^+$		
		2752.0 *10*	71 *10*	145.45	7/2$^+$		
2929.2	(5/2,7/2)$^+$	1636.0 *5*	48 *5*	1292.72	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.012. B(E2)(W.u.)≤14.4.
		2785.2 *11*	41 *5*	145.45	7/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.002. B(E2)(W.u.)≤0.87.
		2930.3 *12*	11 *3*	0.0	5/2$^+$	E2+M1	B(M1)(μ_N^2)≤0.0005. B(E2)(W.u.)≤0.18.
2941.4		1484.2 *10*	21 *13*	1457.32	9/2$^+$		
		1488.6 *8*	21 *13*	1452.36	7/2$^+$		
		2796.4 *14*	26 *8*	145.45	7/2$^+$		
		2941.7 *14*	32 *8*	0.0	5/2$^+$		
2950.5	1/2$^+$	1514.4 *6*	67 *15*	1436.17	3/2$^+$		
		2950.1 *17*	33 *15*	0.0	5/2$^+$		
2983.5	(5/2,7/2)$^-$	2839.0 *7*	18 *11*	145.45	7/2$^+$		
		2983.0 *5*	82 *11*	0.0	5/2$^+$		
3000.74	11/2$^+$	956.0 *4*	30 *11*	2045.11	9/2$^+$		
		1479.5 *5*	20 *11*	1520.80	9/2$^+$		
		2855.2 *3*	50 *9*	145.45	7/2$^+$		
3016.3	5/2$^-$	941.0 *5*	33 *8*	2075.54	5/2$^+$,7/2$^+$		
		1887.9 *13*	17 *6*	1126.82	3/2$^+$		
		2871.0 *19*	13 *5*	145.45	7/2$^+$		
		3015.9 *15*	34 *6*	0.0	5/2$^+$		
3034.3	1/2$^+$	1734.9 *7*	60 *20*	1298.68	1/2$^+$		Final J^π of 5/2$^+$ as in table III of 2008Sc17 is inconsistent with 1/2$^+$ listed as initial J^π for 1298.4 level.
		1742.5 *8*	40 *20*	1292.72	5/2$^+$		Final J^π of 1/2$^+$ as in table III of 2008Sc17 is inconsistent with 5/2$^+$ listed as initial J^π for 1292.4 level.
3045.5	11/2$^+$,9/2	1524.6 *7*	54 *10*	1520.80	9/2$^+$		
		2900.2 *12*	46 *10*	145.45	7/2$^+$		
3064.5	9/2$^-$	960.5 *6*	32 *21*	2105.02	5/2$^-$		
		1209.9 *6*	30 *12*	1853.70	11/2$^+$		
		2918.4 *12*	38 *8*	145.45	7/2$^+$		
3075.5	3/2$^+$	1623.1 *11*	52 *20*	1452.36	7/2$^+$		
		3075.4 *15*	48 *20*	0.0	5/2$^+$		
3079.9		1094.0 *5*	53 *23*	1985.93	13/2$^+$		
		2934.1 *17*	47 *23*	145.45	7/2$^+$		
3083.4		3083.4 *14*	100	0.0	5/2$^+$		
3114.8		2969.2 *19*	67 *17*	145.45	7/2$^+$		
		3114.8 *15*	33 *17*	0.0	5/2$^+$		
3128.7		764.6 *5*	21 *13*	2362.93	5/2$^-$		

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02 (continued)

γ(^{141}Pr) (continued)

E_i(level)	J_i^π	E_γ[†][‡]	I_γ[#]	E_f	J_f^π	Comments
3128.7		1838.1[d] *7*	39 *10*	1292.72	$5/2^+$	Final J^π of $1/2^+$ as in table III of 2008Sc17 is inconsistent with $5/2^+$ listed as initial J^π for 1292.4 level.
		3128.7 *16*	40 *10*	0.0	$5/2^+$	
3155.5		1180.3 *7*	29 *10*	1975.27	$3/2^+$	
		1497.7 *14*	14 *10*	1657.05	$1/2^+$	
		1574.7 *13*	24 *12*	1580.06	$5/2^{(-)}$	
		3011.2 *12*	33 *7*	145.45	$7/2^+$	

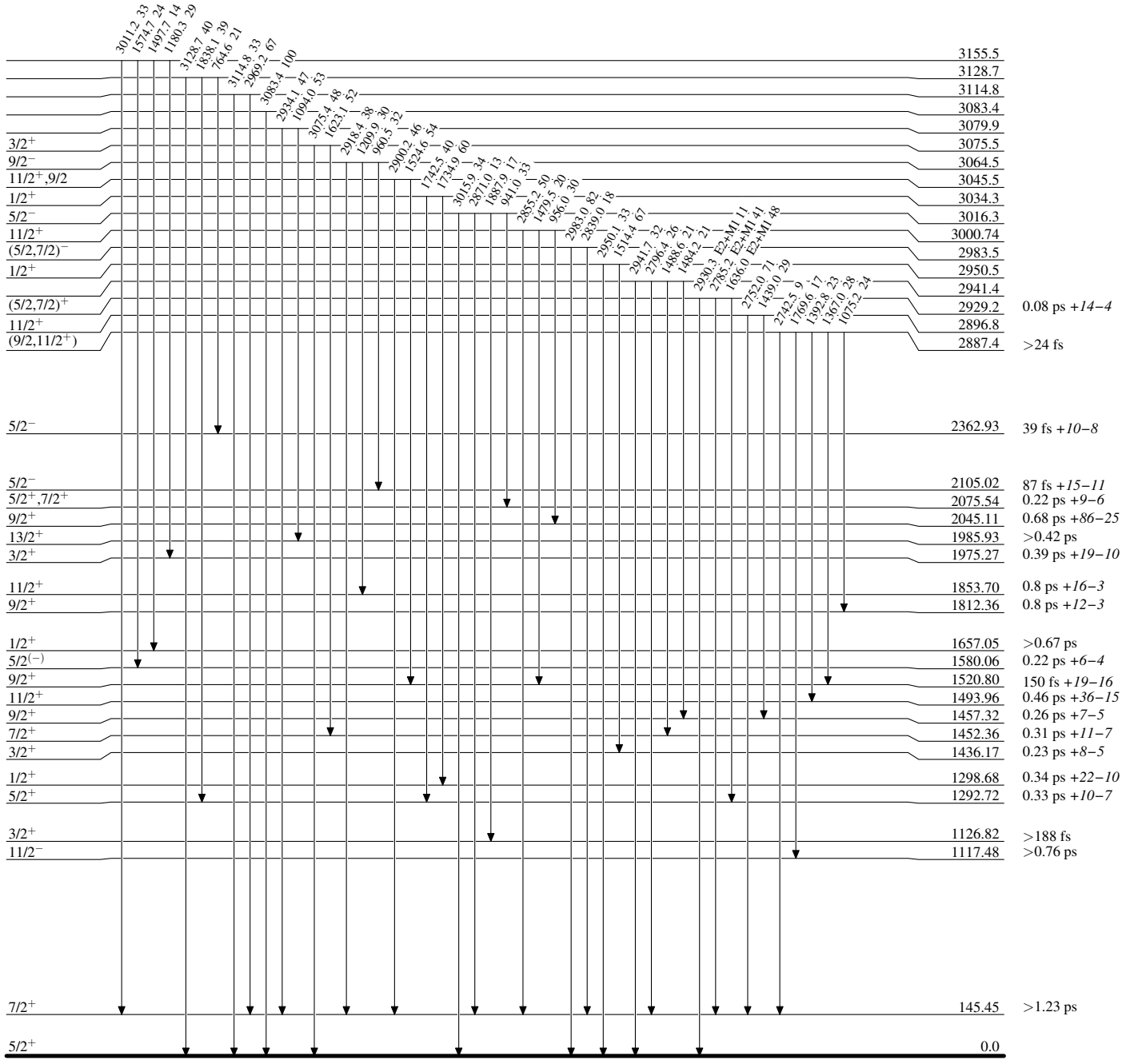
† From 2008Sc17, unless noted otherwise. Uncertainty includes statistical and systematic components.
‡ Unplaced gammas are from 2008Sc17, unless noted otherwise.
# Relative photon branchings from each level.
@ From 2008Sc17 from angular distribution measurements. Sign given by 2008Sc17 has been reversed here to conform to Krane-Steffen convention used in ENSDF database. 2008Sc17 state use of Rose-Brink convention.
& Observed only by 1978AhZX; the intensities are relative to I(1127γ)=100%.
a Observed only by 1994De56 (ΔEγ assumed by evaluator).
b Observed by 1984Tr02 and 1994De56 but not by 2008Sc17.
c Iγ(1910γ)/Iγ(1765γ)=42/58 (1994De56).
d Differs from the fitted value by 3σ or more.
e Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

$^{141}_{59}Pr_{82}$-16

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Level Scheme

Intensities: % photon branching from each level

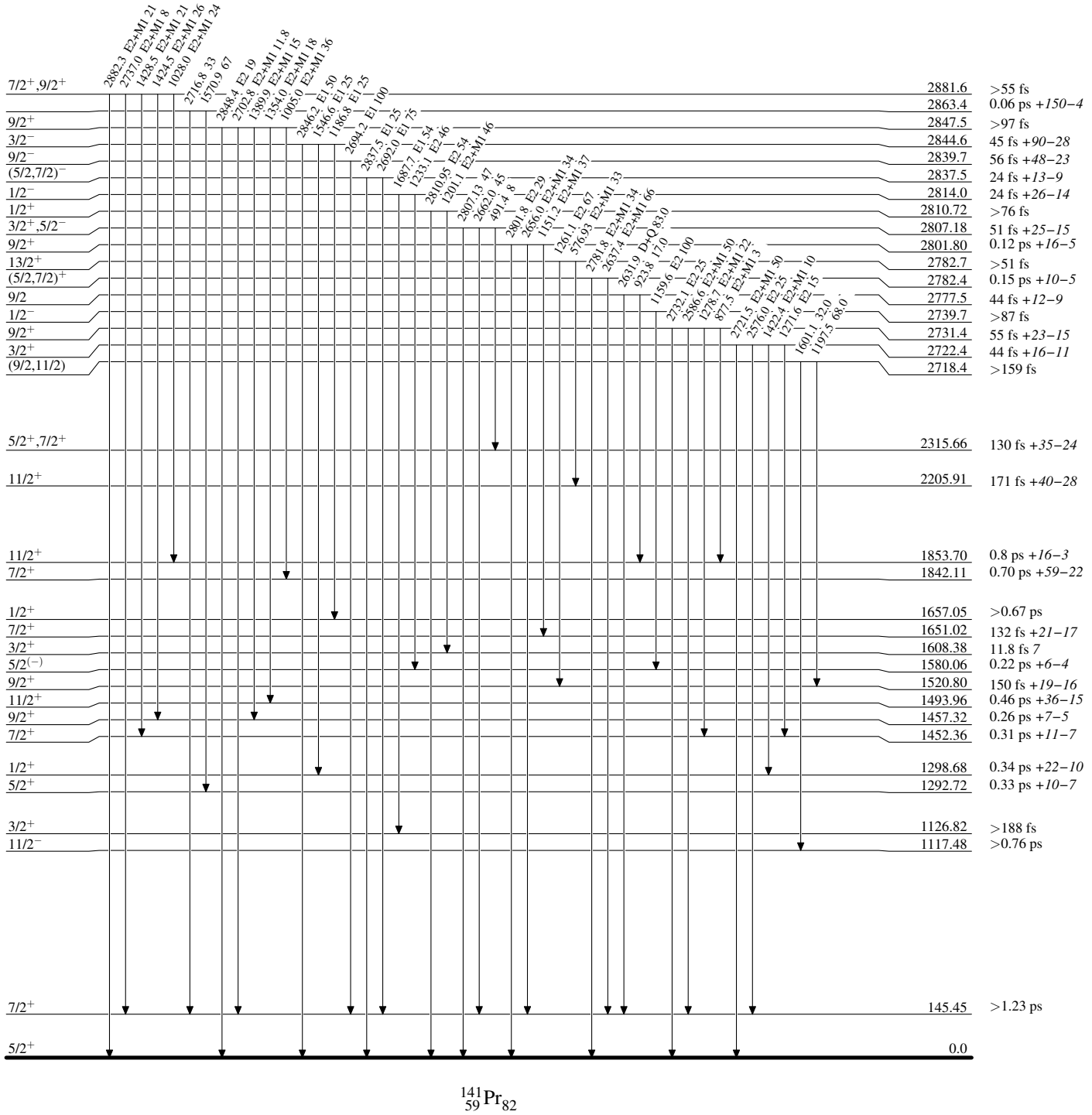


$^{141}_{59}Pr_{82}$

^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Level Scheme (continued)

Intensities: % photon branching from each level



$^{141}_{59}Pr_{82}$

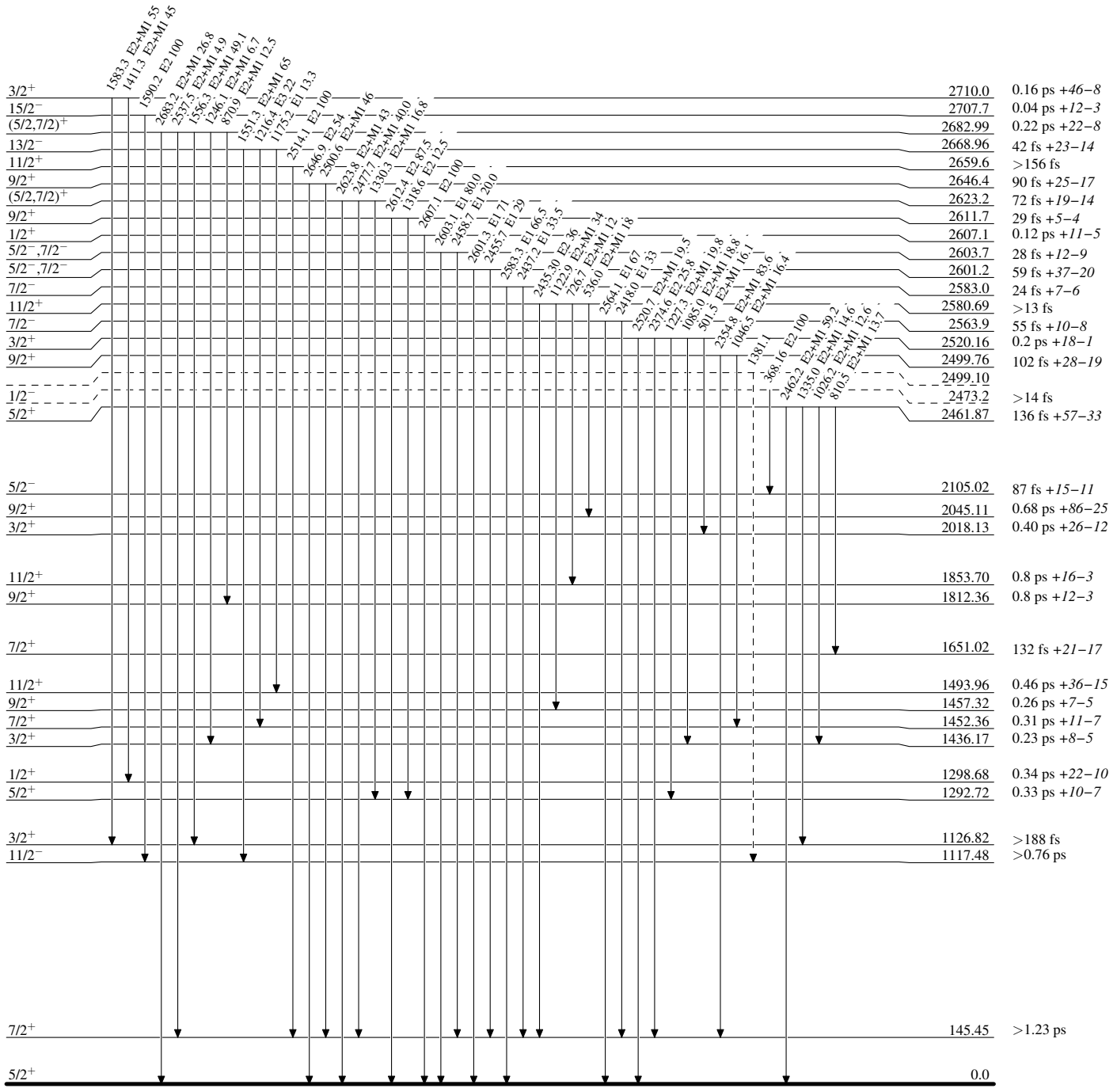
^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{141}_{59}Pr_{82}$

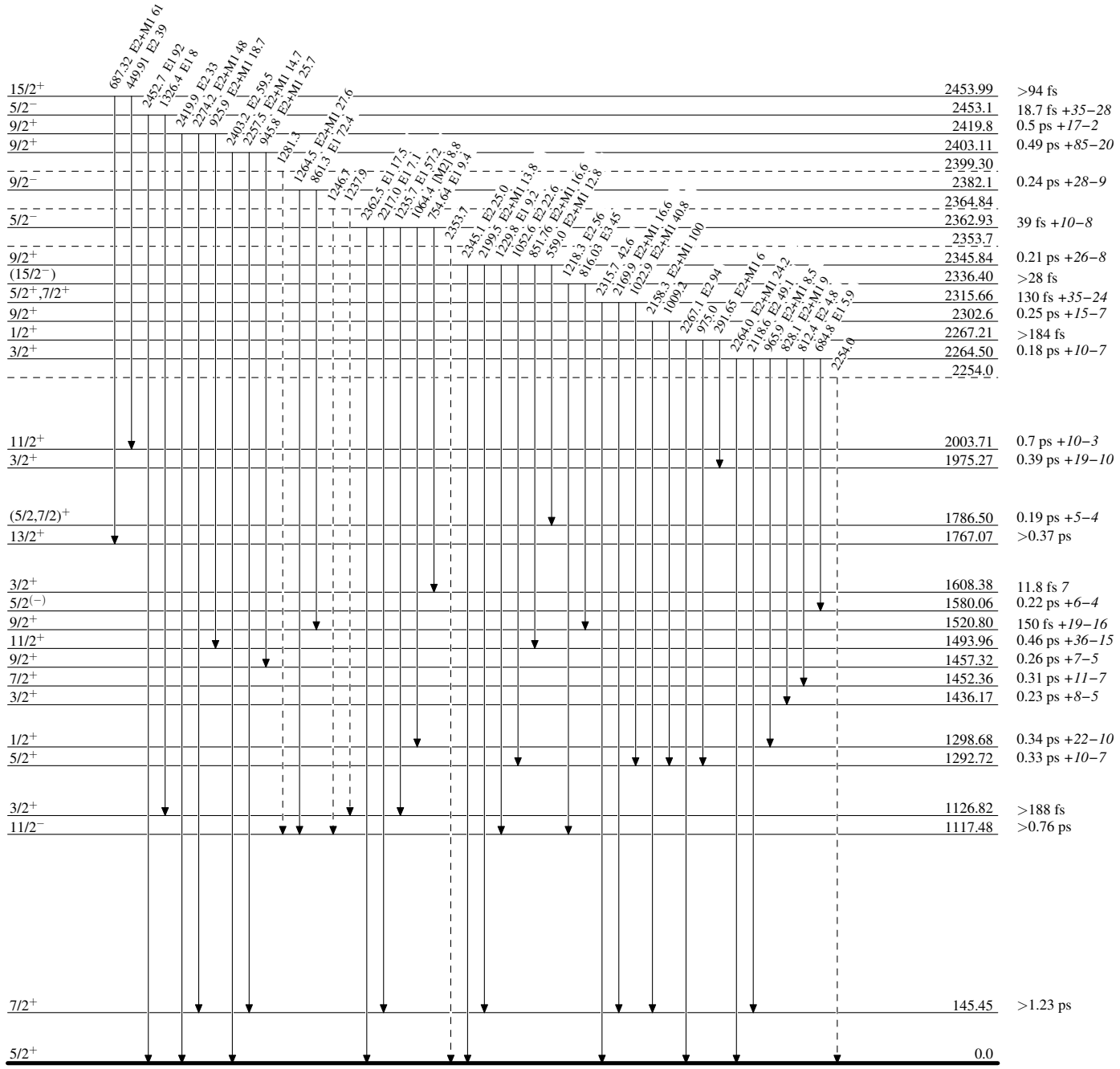
^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{141}_{59}Pr_{82}$

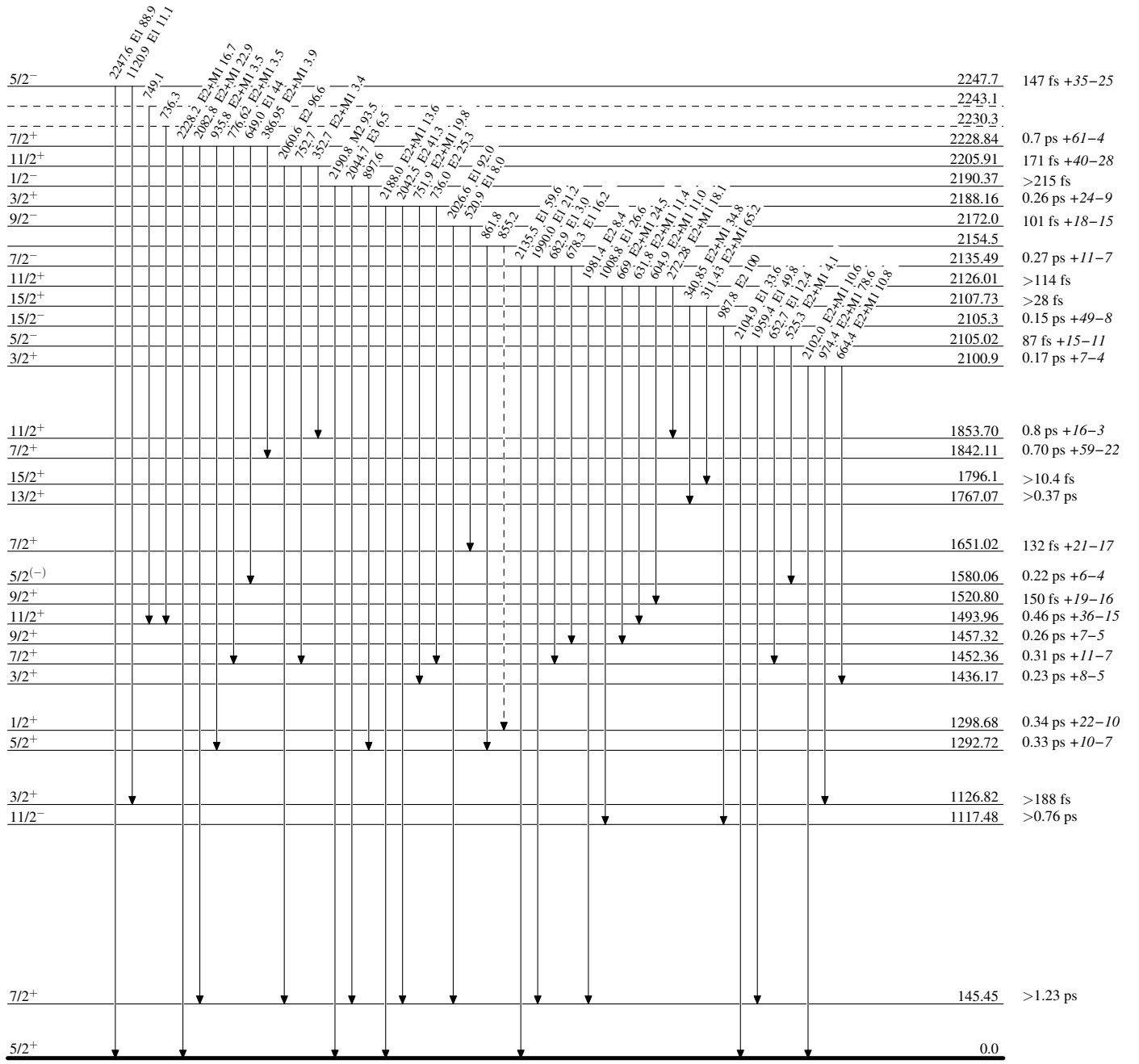
^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{141}_{59}Pr_{82}$

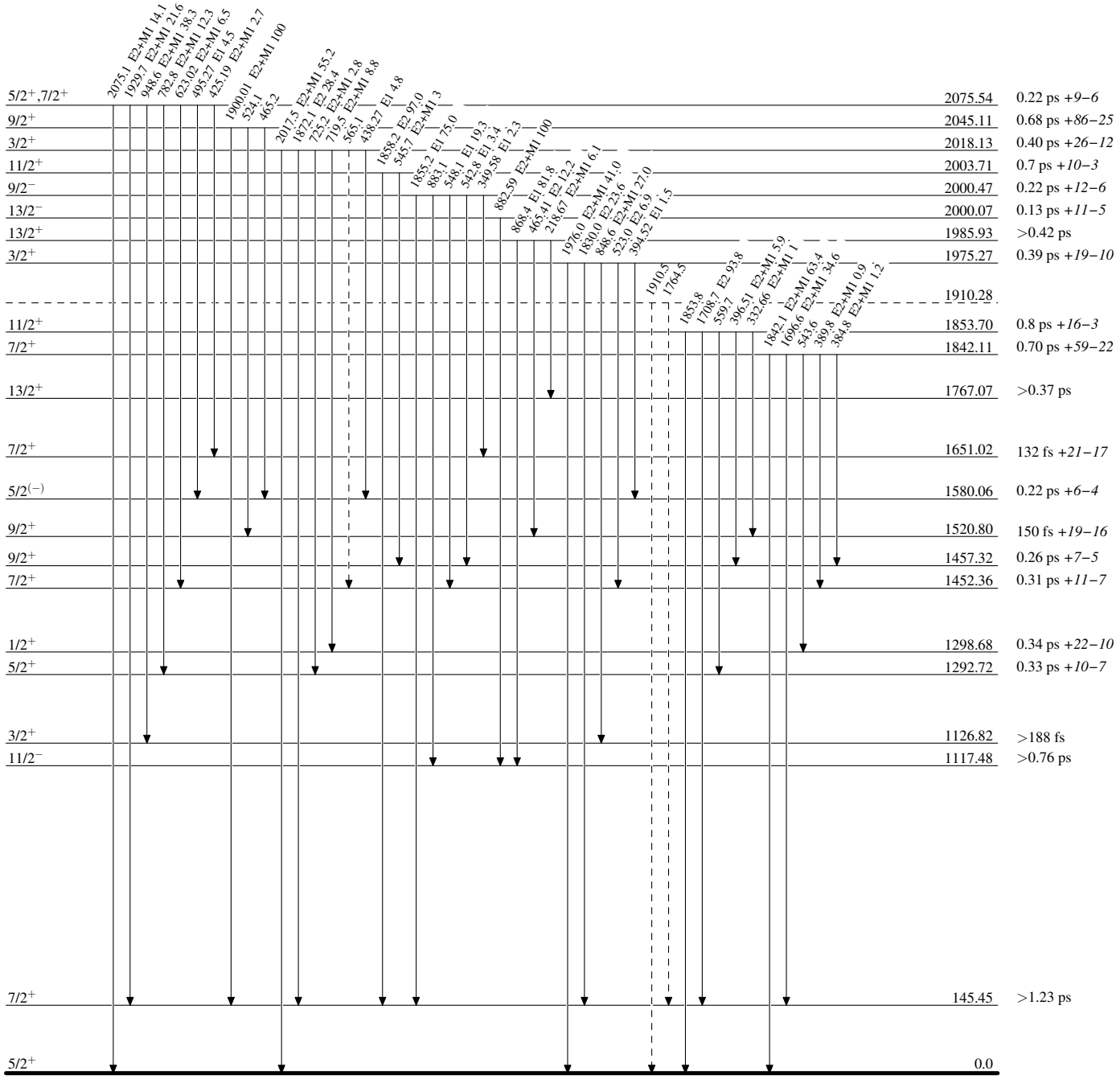
^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{141}_{59}Pr_{82}$

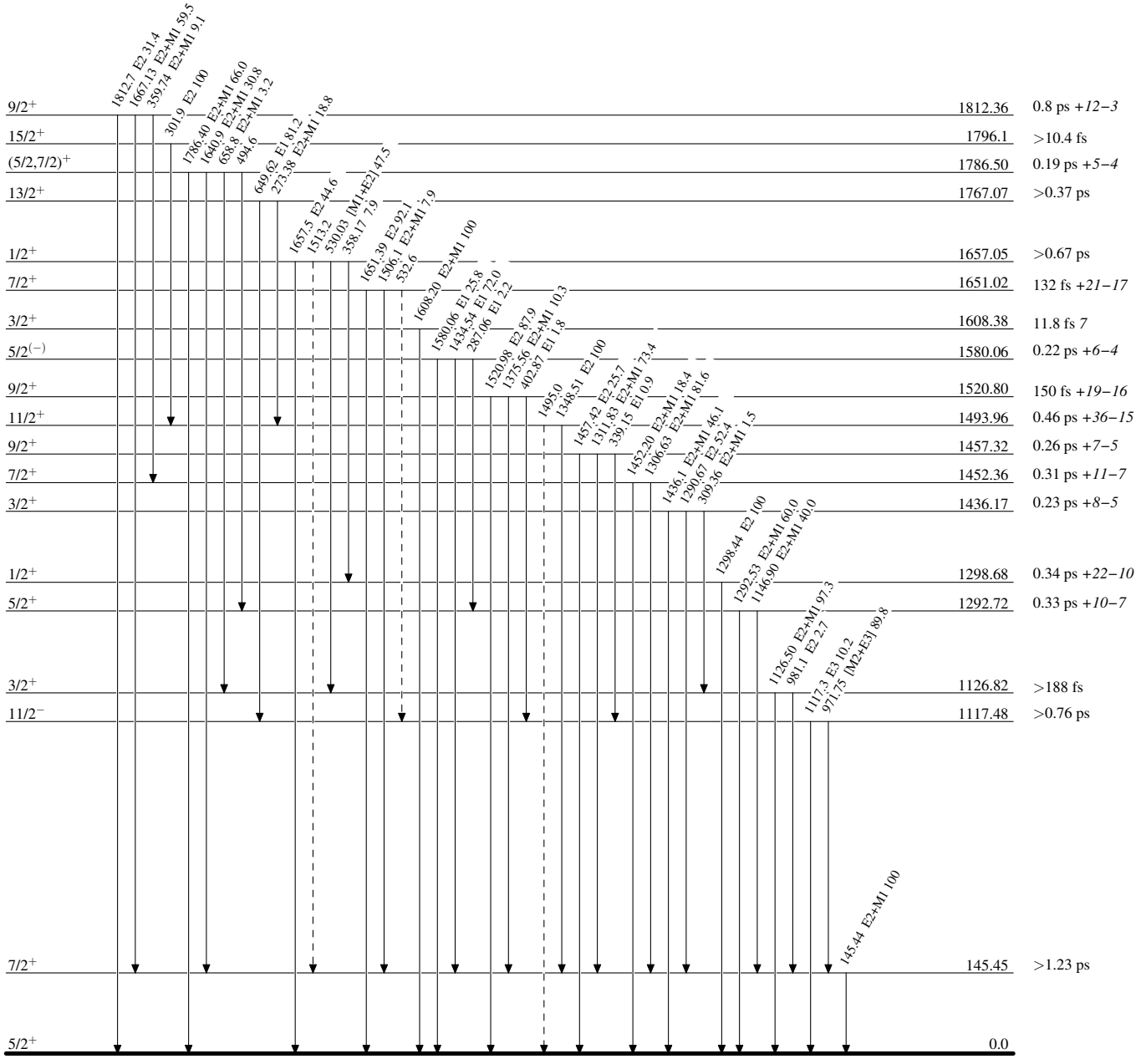
^{141}Pr(n,n′γ) 2008Sc17,1994De56,1984Tr02

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{141}_{59}Pr_{82}$