Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

Q(β^-)=4872 *15*; S(n)=5163 *22*; S(p)=7810 *17*; Q(α)=−111 *20* 2012Wa38

^{148}Pr Levels

Cross Reference (XREF) Flags

A ^{148}Ce β^- decay
B ^{148}Pr IT decay

E(level)†	J$^\pi$	$T_{1/2}$	XREF	Comments
0.0	1$^-$	2.29 min *2*	AB	%β^-=100 configuration: $\pi 3/2^+[411] \otimes \nu 5/2^-[523]$ (^{148}Pr IT decay). $T_{1/2}$: weighted average of: 2.25 min *8* (1986Wa06), 2.33 min *5* (1986BuZV), 2.27 min *4* (1979Ik06), 2.28 min *5* (1979Ta17), 2.28 min *9* (1976Ya06). Other: 2.47 min *13* (1969WiZX). J$^\pi$: log *ft*=7.2 and 7.0 for β^-transitions to 0$^+$ and 2$^+$ levels in ^{148}Pr (2.29) β^- decay, and 121.2γ from π=− level is M1,E2.
76.80 *20*	4$^-$	2.01 min *7*	B	%IT=36 *10*; %β^-=64 *10* configuration: $\pi 5/2^+[413] \otimes \nu 3/2^-[532]$ (^{148}Pr IT decay). J$^\pi$: ΔJ=3 M3 γ to 1$^-$, g.s.. $T_{1/2}$: weighted average of 2.0 min *1* (1979Ik06), 2.02 min *9* (1986Wa06).
98.166 *3*	1$^-$,2$^-$,3$^-$		A	J$^\pi$: E2 to 1$^-$, g.s..
98.967 *20*	0$^-$,1$^-$,2$^-$		A	J$^\pi$: M1 to 1$^-$, g.s..
105.161 *19*	(0,1,2)$^-$		A	J$^\pi$: M1,E2 γ to 1$^-$, g.s..
121.169 *3*	0$^-$,1$^-$,2$^-$		A	J$^\pi$: E1 γ from 1$^+$, 391.
195.993 *13*	1		A	J$^\pi$: log *ft*=5.72 via 0$^+$ parent in ^{148}Ce β^- decay gives J$^\pi$=1$^+$; M1,E2 γ to π=−, 105 level gives negative parity indicating an inconsistency.
273.744 *25*	0$^+$,1$^+$,2$^+$		A	J$^\pi$: E1 γ to 1$^-$, g.s..
287.20 *5*			A	
289.656 *19*	$^+$		A	J$^\pi$: E1 γ to π=−, 105.
332.75 *9*			A	
352.70 *8*	$^-$		A	J$^\pi$: M1,E2 γ to π=−, 105.
390.684 *19*	1$^+$		A	J$^\pi$: log *ft*=4.5 via 0$^+$ parent; 0$^+$ strongly unlikely from level scheme and systematics (As shown by 1983Ar15 In ^{148}Ce β^- decay).
467.77 *9*			A	
520.83 *4*	1$^+$		A	J$^\pi$: log *ft*=4.95 via 0$^+$ parent; 0$^+$ strongly unlikely from level scheme and systematics (As shown by 1983Ar15 In ^{148}Ce β^- decay).
626.36 *20*			A	
765.46 *11*	1$^+$		A	J$^\pi$: log *ft*=5.6 via 0$^+$ parent; 0$^+$ strongly unlikely from level scheme and systematics (As shown by 1983Ar15 In ^{148}Ce β^- decay).

† From a least-squares fit to Eγ data (normalized χ^2=1.95>critical χ^2=1.76).

Adopted Levels, Gammas (continued)

$\gamma(^{148}Pr)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[†]	Comments
76.80	4^-	76.8 *2*	100	0.0	1^-	M3	354 *7*	α(K)=168 *3*; α(L)=142 *3*; α(M)=34.9 *7*; α(N+..)=9.00 *19* α(N)=7.81 *16*; α(O)=1.147 *24*; α(P)=0.0446 *9* B(M3)(W.u.)=0.045 *13* Mult.: from α(K)exp and α(L)exp In ^{148}Pr IT decay.
98.166	$1^-,2^-,3^-$	98.166 *3*	100	0.0	1^-	E2[‡]	2.26	α(K)=1.279 *18*; α(L)=0.770 *11*; α(M)=0.1735 *25*; α(N+..)=0.0428 *6* α(N)=0.0375 *6*; α(O)=0.00523 *8*; α(P)=6.65×10^{-5} *10*
98.967	$0^-,1^-,2^-$	98.99 *3*	100	0.0	1^-	M1[‡]	1.333	α(K)=1.135 *16*; α(L)=0.1566 *22*; α(M)=0.0330 *5*; α(N+..)=0.00866 *13* α(N)=0.00738 *11*; α(O)=0.001188 *17*; α(P)=8.72×10^{-5} *13*
105.161	$(0,1,2)^-$	105.20 *3*	100	0.0	1^-	M1,E2[‡]	1.4 *4*	α(K)=1.00 *5*; α(L)=0.35 *22*; α(M)=0.08 *5*; α(N+..)=0.019 *12* α(N)=0.017 *11*; α(O)=0.0024 *15*; α(P)=6.4×10^{-5} *10*
121.169	$0^-,1^-,2^-$	121.169 *3*	100	0.0	1^-	M1,E2[‡]	0.91 *16*	α(K)=0.661 *25*; α(L)=0.20 *11*; α(M)=0.043 *25*; α(N+..)=0.011 *6* α(N)=0.009 *6*; α(O)=0.0014 *7*; α(P)=4.3×10^{-5} *6*
195.993	1	74.5 *5*	2.1	121.169	$0^-,1^-,2^-$			
		90.89 *3*	32	105.161	$(0,1,2)^-$	M1,E2[‡]	2.3 *7*	α(K)=1.52 *8*; α(L)=0.6 *5*; α(M)=0.14 *11*; α(N+..)=0.036 *25* α(N)=0.031 *22*; α(O)=0.004 *3*; α(P)=9.7×10^{-5} *15*
		98.0 *1*	20	98.166	$1^-,2^-,3^-$			
		195.977 *14*	100	0.0	1^-			
273.744	$0^+,1^+,2^+$	168.52 *4*	6.1	105.161	$(0,1,2)^-$			
		273.77 *5*	100	0.0	1^-	E1[‡]	0.01645	α(K)=0.01409 *20*; α(L)=0.00187 *3*; α(M)=0.000390 *6*; α(N+..)=0.0001014 *15* α(N)=8.67×10^{-5} *13*; α(O)=1.374×10^{-5} *20*; α(P)=9.38×10^{-7} *14*
287.20		188.5 *3*	63	98.967	$0^-,1^-,2^-$			
		287.17 *10*	100	0.0	1^-			
289.656	$^+$	184.53 *4*	29	105.161	$(0,1,2)^-$	E1[‡]	0.0469	α(K)=0.0401 *6*; α(L)=0.00541 *8*; α(M)=0.001132 *16*; α(N+..)=0.000293 *5* α(N)=0.000251 *4*; α(O)=3.94×10^{-5} *6*; α(P)=2.57×10^{-6} *4*
		191.6 *1*	29	98.166	$1^-,2^-,3^-$			
		289.64 *6*	100	0.0	1^-			
332.75		332.7 *1*	100	0.0	1^-			
352.70	$^-$	231.6 *2*	19	121.169	$0^-,1^-,2^-$	M1,E2[‡]	0.121 *5*	α(K)=0.098 *9*; α(L)=0.018 *4*; α(M)=0.0038 *8*; α(N+..)=0.00098 *19* α(N)=0.00084 *17*; α(O)=0.000129 *20*; α(P)=6.9×10^{-6} *13*
		247.52 *9*	53	105.161	$(0,1,2)^-$			
		352.4 *2*	100	0.0	1^-			
390.684	1^+	101.029 *4*	21	289.656	$^+$	M1,E2[‡]	1.7 *4*	α(K)=1.12 *6*; α(L)=0.4 *3*; α(M)=0.09 *6*;

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{148}Pr) (continued)

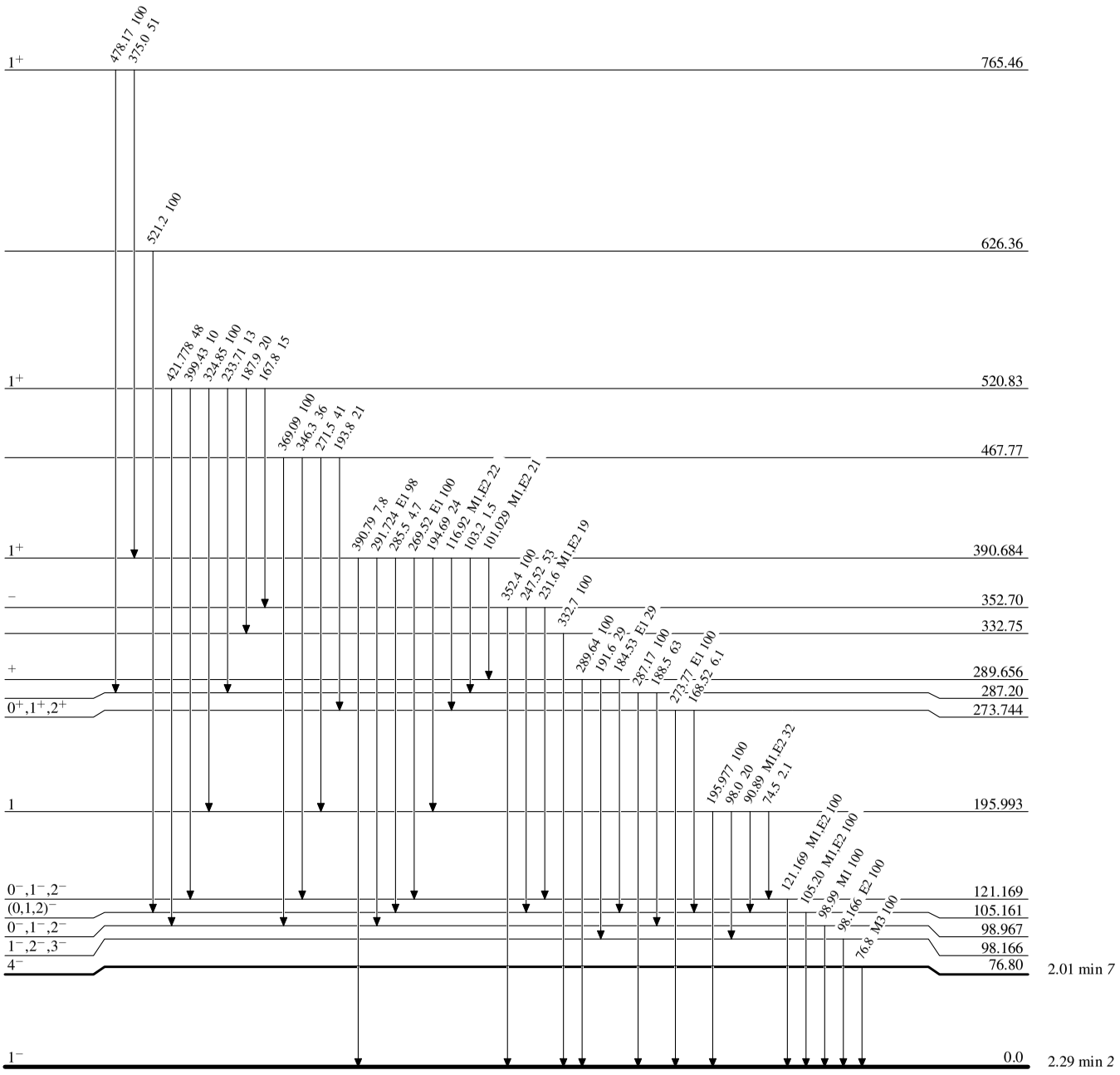
E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α†	Comments
								α(N+..)=0.023 *15* α(N)=0.020 *13*; α(O)=0.0029 *18*; α(P)=7.2×10^{-5} *11*
390.684	1$^+$	103.2 *1*	1.5	287.20				
		116.92 *3*	22	273.744	0$^+$,1$^+$,2$^+$	M1,E2‡	1.02 *20*	α(K)=0.73 *3*; α(L)=0.23 *13*; α(M)=0.05 *3*; α(N+..)=0.013 *8* α(N)=0.011 *7*; α(O)=0.0016 *9*; α(P)=4.8×10^{-5} *7*
		194.69 *5*	24	195.993	1			
		269.52 *5*	100	121.169	0$^-$,1$^-$,2$^-$	E1‡	0.01713	α(K)=0.01468 *21*; α(L)=0.00194 *3*; α(M)=0.000407 *6*; α(N+..)=0.0001057 *15* α(N)=9.04×10^{-5} *13*; α(O)=1.431×10^{-5} *20*; α(P)=9.75×10^{-7} *14*
		285.5 *1*	4.7	105.161	(0,1,2)$^-$			
		291.724 *17*	98	98.967	0$^-$,1$^-$,2$^-$	E1‡	0.01396	α(K)=0.01197 *17*; α(L)=0.001579 *23*; α(M)=0.000331 *5*; α(N+..)=8.59×10^{-5} *12* α(N)=7.35×10^{-5} *11*; α(O)=1.165×10^{-5} *17*; α(P)=8.00×10^{-7} *12*
		390.79 *16*	7.8	0.0	1$^-$			
467.77		193.8 *2*	21	273.744	0$^+$,1$^+$,2$^+$			
		271.5 *2*	41	195.993	1			
		346.3 *2*	36	121.169	0$^-$,1$^-$,2$^-$			
		369.09 *12*	100	98.967	0$^-$,1$^-$,2$^-$			
520.83	1$^+$	167.8 *2*	15	352.70	$^-$			
		187.9 *2*	20	332.75				
		233.71 *5*	13	287.20				
		324.85 *5*	100	195.993	1			
		399.43 *19*	10	121.169	0$^-$,1$^-$,2$^-$			
		421.778 *62*	48	98.967	0$^-$,1$^-$,2$^-$			
626.36		521.2 *2*	100	105.161	(0,1,2)$^-$			
765.46	1$^+$	375.0 *2*	51	390.684	1$^+$			
		478.17 *12*	100	287.20				

† Additional information 1.
‡ From α(K)exp In ^{148}Ce β^- decay, except if noted otherwise.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{148}_{59}Pr_{89}$