

¹³⁹La(α,nγ), ¹⁴²Ce(p,nγ) **1975Be36**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli		NDS 112, 1949 (2011)	1-Jun-2010

E(α)=16.5 MeV, E(p)=9.5 MeV.
Measured: G.

¹⁴²Pr Levels

E(level)	J ^π †	E(level)	J ^π †	E(level)	J ^π †	T _{1/2}
0.0	2 ⁻	153.5? 10		790.1 6	2 ⁻ ,3 ⁻	
3.4 7	5 ⁻	176.8 5	(3) ⁻	822.7 6	2 ⁻ ,3 ⁻	
17.5 5	3 ⁻	200.6 5	(2) ⁻	910.6 15	(9 ⁺)	61 [‡] ns 6
62.8 7	6 ⁻	357.6 11	(7 ⁻)	978.0 9	2 ⁻ ,3 ⁻	
71.9 6	4 ⁻	630.8 6		1041.8 7	2 ⁻ ,3 ⁻	
84.8 5	1 ⁻	636.6 6	4 ⁻	1119.4 12	3 ⁻ ,4 ⁻	
89.7 11	(6 ⁻)	702.7 9		1152.1 7	2 ⁻ ,3 ⁻	
127.5 7	5 ⁻	704.8 6	3 ⁻ ,4 ⁻	1175.6 7		
144.6 6	4 ⁻	746.6 6	2 ⁻ ,3 ⁻			

† Adopted values.

‡ From (α,nγ) (1975Sc17). Isomer supported by 1999MoZW in their preliminary results using ¹³⁰Te(¹⁸O,p5nγ) reaction.

γ(¹⁴²Pr)

E _γ †	I _γ †	E _i (level)	J _i ^π	E _f	J _f ^π	Comments
32.3	110	176.8	(3) ⁻	144.6 4 ⁻		I _γ : from branching in (n,γ).
54.5	1475	71.9	4 ⁻	17.5 3 ⁻		
56.0	<8.9	127.5	5 ⁻	71.9 4 ⁻		
60.0		62.8	6 ⁻	3.4 5 ⁻		
64.3	889	127.5	5 ⁻	62.8 6 ⁻		
68.6	1720	71.9	4 ⁻	3.4 5 ⁻		
85.0		84.8	1 ⁻	0.0 2 ⁻		
86.7		89.7	(6 ⁻)	3.4 5 ⁻		
104.4	129	176.8	(3) ⁻	71.9 4 ⁻		
109.8		746.6	2 ⁻ ,3 ⁻	636.6 4 ⁻		
115.5	214	200.6	(2) ⁻	84.8 1 ⁻		
124.3	134	127.5	5 ⁻	3.4 5 ⁻		
126.7	792	144.6	4 ⁻	17.5 3 ⁻		
140.7	1159	144.6	4 ⁻	3.4 5 ⁻		
153.5		153.5?		0.0 2 ⁻		
159.2	<4.3	176.8	(3) ⁻	17.5 3 ⁻		
176.8	2134	176.8	(3) ⁻	0.0 2 ⁻		
182.8	1233	200.6	(2) ⁻	17.5 3 ⁻		
187.5		978.0	2 ⁻ ,3 ⁻	790.1 2 ⁻ ,3 ⁻		
200.3	128	200.6	(2) ⁻	0.0 2 ⁻		
268.2	181	357.6	(7 ⁻)	89.7 (6 ⁻)		
294.5	66	357.6	(7 ⁻)	62.8 6 ⁻		
430.5		630.8		200.6 (2) ⁻		
460.0		636.6	4 ⁻	176.8 (3) ⁻		
509.0		636.6	4 ⁻	127.5 5 ⁻		
528.3		704.8	3 ⁻ ,4 ⁻	176.8 (3) ⁻		
546.5		630.8		84.8 1 ⁻		
546.5		746.6	2 ⁻ ,3 ⁻	200.6 (2) ⁻		
553.0		910.6	(9 ⁺)	357.6 (7 ⁻)		

Continued on next page (footnotes at end of table)

$^{139}\text{La}(\alpha, n\gamma), ^{142}\text{Ce}(p, n\gamma)$ **1975Be36 (continued)** $\gamma(^{142}\text{Pr})$ (continued)

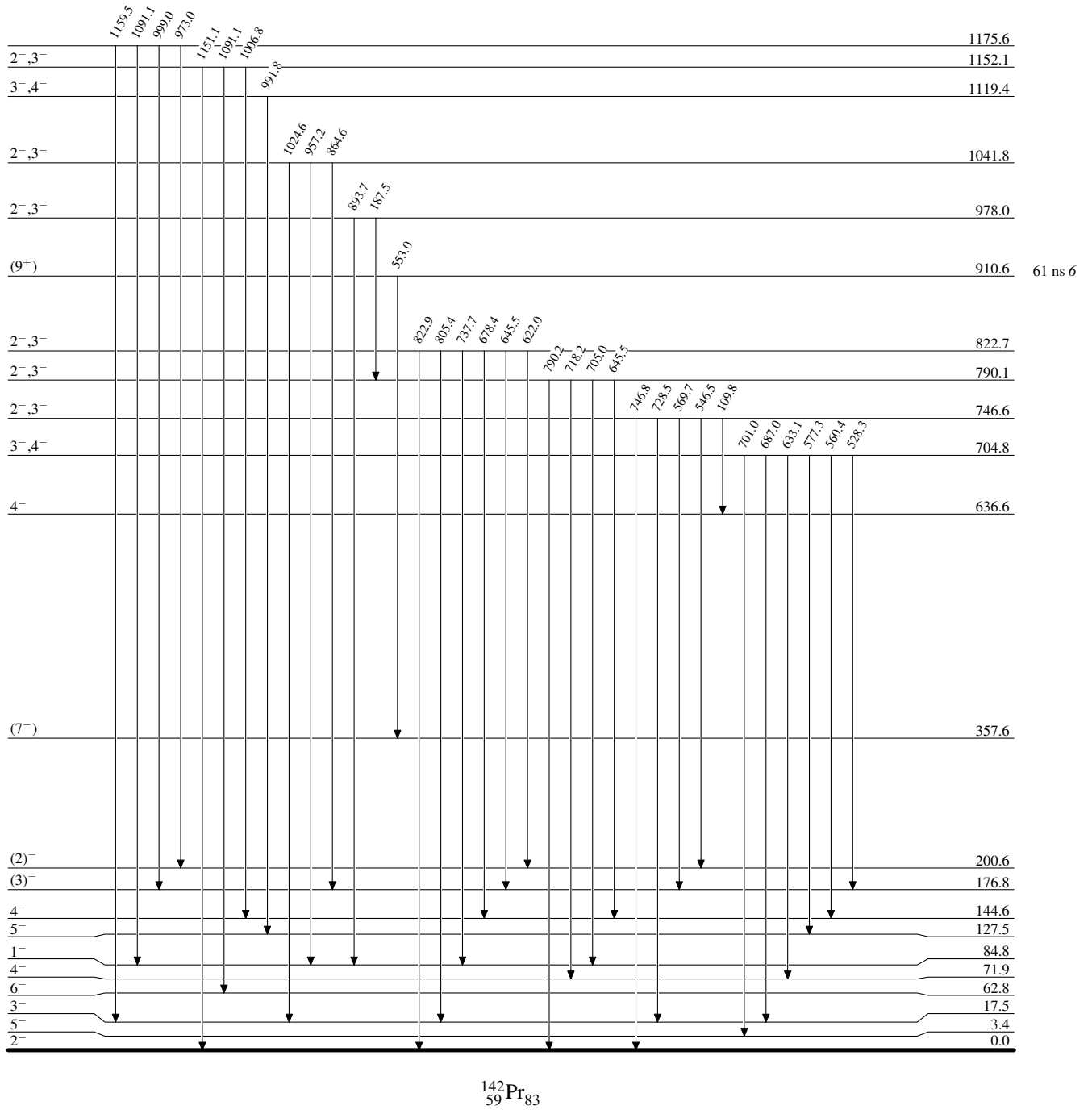
E_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
557.5	702.7		144.6	4 ⁻	718.2	790.1	2 ⁻ , 3 ⁻	71.9	4 ⁻
560.4	704.8	3 ⁻ , 4 ⁻	144.6	4 ⁻	728.5	746.6	2 ⁻ , 3 ⁻	17.5	3 ⁻
564.2	636.6	4 ⁻	71.9	4 ⁻	737.7	822.7	2 ⁻ , 3 ⁻	84.8	1 ⁻
569.7	746.6	2 ⁻ , 3 ⁻	176.8	(3) ⁻	746.8	746.6	2 ⁻ , 3 ⁻	0.0	2 ⁻
573.5	636.6	4 ⁻	62.8	6 ⁻	790.2	790.1	2 ⁻ , 3 ⁻	0.0	2 ⁻
577.3	704.8	3 ⁻ , 4 ⁻	127.5	5 ⁻	805.4	822.7	2 ⁻ , 3 ⁻	17.5	3 ⁻
611.9	630.8		17.5	3 ⁻	822.9	822.7	2 ⁻ , 3 ⁻	0.0	2 ⁻
619.8	636.6	4 ⁻	17.5	3 ⁻	864.6	1041.8	2 ⁻ , 3 ⁻	176.8	(3) ⁻
622.0	822.7	2 ⁻ , 3 ⁻	200.6	(2) ⁻	893.7	978.0	2 ⁻ , 3 ⁻	84.8	1 ⁻
631.4	630.8		0.0	2 ⁻	957.2	1041.8	2 ⁻ , 3 ⁻	84.8	1 ⁻
631.4	702.7		71.9	4 ⁻	973.0	1175.6		200.6	(2) ⁻
633.1	636.6	4 ⁻	3.4	5 ⁻	991.8	1119.4	3 ⁻ , 4 ⁻	127.5	5 ⁻
633.1	704.8	3 ⁻ , 4 ⁻	71.9	4 ⁻	999.0	1175.6		176.8	(3) ⁻
645.5	790.1	2 ⁻ , 3 ⁻	144.6	4 ⁻	1006.8	1152.1	2 ⁻ , 3 ⁻	144.6	4 ⁻
645.5	822.7	2 ⁻ , 3 ⁻	176.8	(3) ⁻	1024.6	1041.8	2 ⁻ , 3 ⁻	17.5	3 ⁻
678.4	822.7	2 ⁻ , 3 ⁻	144.6	4 ⁻	1091.1	1152.1	2 ⁻ , 3 ⁻	62.8	6 ⁻
687.0	704.8	3 ⁻ , 4 ⁻	17.5	3 ⁻	1091.1	1175.6		84.8	1 ⁻
701.0	704.8	3 ⁻ , 4 ⁻	3.4	5 ⁻	1151.1	1152.1	2 ⁻ , 3 ⁻	0.0	2 ⁻
705.0	790.1	2 ⁻ , 3 ⁻	84.8	1 ⁻	1159.5	1175.6		17.5	3 ⁻

† From (p,n γ).

¹³⁹La(α,γ), ¹⁴²Ce(p, γ) 1975Be36

Level Scheme

Intensities: Relative I _{γ}



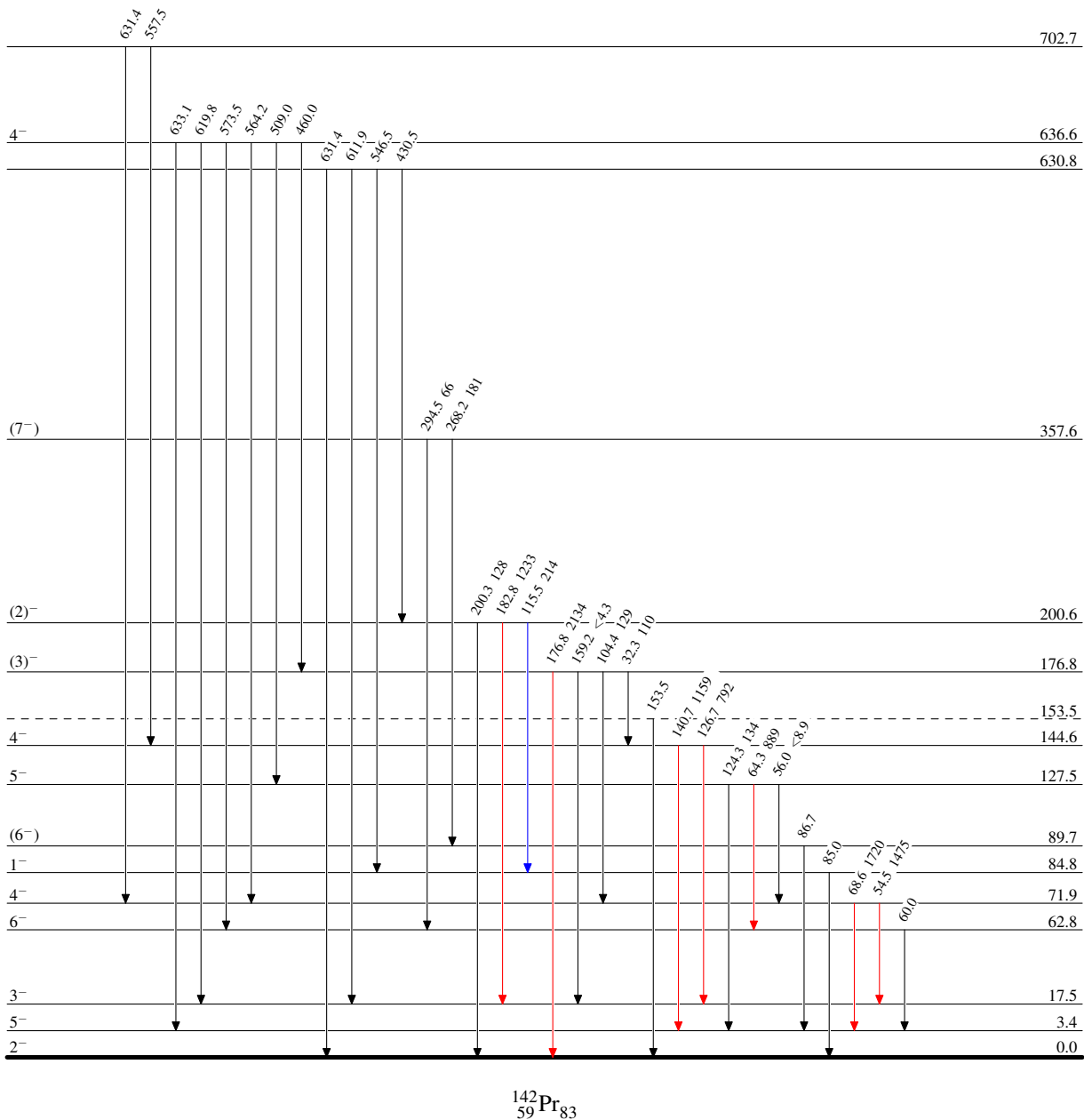
$^{139}\text{La}(\alpha, n\gamma), ^{142}\text{Ce}(p, n\gamma)$ 1975Be36

Level Scheme (continued)

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$



$^{142}\text{Pr}_{83}$