

Adopted Levels, Gammas

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

$Q(\beta^-)=2471$ 6; $S(n)=5894$ 6; $S(p)=6007$ 6; $Q(\alpha)=1460$ 6 [2012Wa38](#)

 ^{148}Pm LevelsCross Reference (XREF) Flags

A ^{148}Pm IT decay (41.29 d)
B $^{148}\text{Nd}(p,n\gamma)$
C $^{149}\text{Sm}(d,^3\text{He})$

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0.0	1 ⁻	5.368 d 7	ABC	$\% \beta^- = 100$ $\mu = 1.84$ 19 (1989Ra17 , 1963Gr10) $Q = +0.2$ 2 (1989Ra17 , 1965Al10) T _{1/2} : weighted average of: 5.370 d 9 (1970Ca09), 5.364 d 15 and 5.365 d 20 (1971Ca23). Others: 5.37 d 4 (1971Mo04), 5.39 d 6 (1962Re03). J ^π : J=1 from atomic-beam magnetic resonance (1976Fu06 , 1965Al10), $\pi=-$ from the observed shape of the β^- spectrum and $\log ft$ (1963Ba06). This assignment is confirmed by the shape of the β^- spectrum and $\beta^- \gamma(\theta)$ (1963Ba31) and (e,e'p) data (1971Sh08). J ^π : 0 ⁻ , 1 ⁻ , 2 ⁻ from M1 to 1 ⁻ ; not 0 ⁻ from E4 from 137.9 level.
75.70 25	1 ⁻ , 2 ⁻		ABC	
137.1 6			Bc	
137.9 3	5 ⁻ , 6 ⁻	41.29 d 11	ABC	$\% \beta^- = 95.8$ 6; $\% \text{IT} = 4.2$ 6 $\mu = 1.82$ 18 (1989Ra17 , 1963Gr10) T _{1/2} : from 1971Wa05 . Others: 41.4 d 8 (1971BaZW), 40.9 d 2 (1971Mo04), 40.6 d 4 (1962Re03). J ^π : J=5,6,7 from $\log ft$ to 6 ⁺ 2194.5-keV level; not 7 and $\pi=-$ from E4 to 75.7 level.
215.3 4			Bc	
219.9 3			Bc	
292.0 3			B	
302.9 4			B	
304.7 3			Bc	
308.9 3			Bc	
363.4 4			BC	
379.7 3			B	
385.6 4			B	
388.1 3			BC	
409.6 4			Bc	
413.5 4			Bc	
440.1 3			B	
452.0 3			B	
462 6			C	
526.5 4			Bc	
529.4 5			Bc	
543.4 4			B	
545.7 4			B	
550.3 4			BC	
561.3 4			B	
564.2 4			Bc	
573.1 3			Bc	
611.2 5			BC	
622.7 6			B	
641.9 5			BC	

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Adopted Levels, Gammas (continued) ^{148}Pm Levels (continued)

E(level) [†]	XREF	E(level) [†]	XREF	E(level) [†]	XREF	E(level) [†]	XREF
655.7 5	Bc	700 6	C	797.0 6	B	910 6	C
660.5 6	Bc	715 6	C	800.6 7	B	958 6	C
669.6 4	B	726.3 3	B	810 6	C		
672.9 4	B	745 6	C	859 6	C		

[†] From a least-squares fit to E γ data from (p,n γ).

 $\gamma(^{148}\text{Pm})$

E _i (level)	J _i ^{π}	E _{γ}	E _f	J _f ^{π}	Mult. [‡]	α [†]	I _(γ+ce)	Comments
75.70	1 ⁻ ,2 ⁻	75.7 5	0.0	1 ⁻	M1	3.45 9	100	ce(K)/(γ +ce)=0.658 9; ce(L)/(γ +ce)=0.093 3; ce(M)/(γ +ce)=0.0198 6; ce(N+)/(γ +ce)=0.00518 16 ce(N)/(γ +ce)=0.00446 14; ce(O)/(γ +ce)=0.000673 21; ce(P)/(γ +ce)=4.23×10 ⁻⁵ 13
137.9	5 ⁻ ,6 ⁻	62.2 5	75.70	1 ⁻ ,2 ⁻	E4	1.23×10 ⁴ 7	100	ce(K)/(γ +ce)=0.00250 16; ce(L)/(γ +ce)=0.74 3; ce(M)/(γ +ce)=0.210 16; ce(N+)/(γ +ce)=0.051 5 ce(N)/(γ +ce)=0.046 4; ce(O)/(γ +ce)=0.0051 5; ce(P)/(γ +ce)=3.2×10 ⁻⁶ 3 B(E4)(W.u.)=0.0073 13 Additional information 1.
215.3		78.2 5	137.1					
219.9		219.9 5	0.0	1 ⁻				
292.0		154.1 5	137.9	5 ⁻ ,6 ⁻				
		216.3 5	75.70	1 ⁻ ,2 ⁻				
		292.0 5	0.0	1 ⁻				
302.9		165.0 5	137.9	5 ⁻ ,6 ⁻				
304.7		84.5 5	219.9					
		229.0 5	75.70	1 ⁻ ,2 ⁻				
		304.7 5	0.0	1 ⁻				
308.9		88.9 5	219.9					
		171.0 [#] 5	137.9	5 ⁻ ,6 ⁻				
		233.2 5	75.70	1 ⁻ ,2 ⁻				
		308.9 5	0.0	1 ⁻				
363.4		148.0 5	215.3					
		225.5 5	137.9	5 ⁻ ,6 ⁻				
379.7		76.8 [#] 5	302.9					
		87.9 5	292.0					
		159.8 5	219.9					
		379.7 5	0.0	1 ⁻				
385.6		170.1 5	215.3					
		248.0 5	137.9	5 ⁻ ,6 ⁻				
388.1		79.2 [#] 5	308.9					
		83.4 [#] 5	304.7					
		96.1 5	292.0					
		250.2 [#] 5	137.9	5 ⁻ ,6 ⁻				
		312.4 5	75.70	1 ⁻ ,2 ⁻				
		388.1 5	0.0	1 ⁻				
409.6		194.4 5	215.3					

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Adopted Levels, Gammas (continued) $\gamma(^{148}\text{Pm})$ (continued)

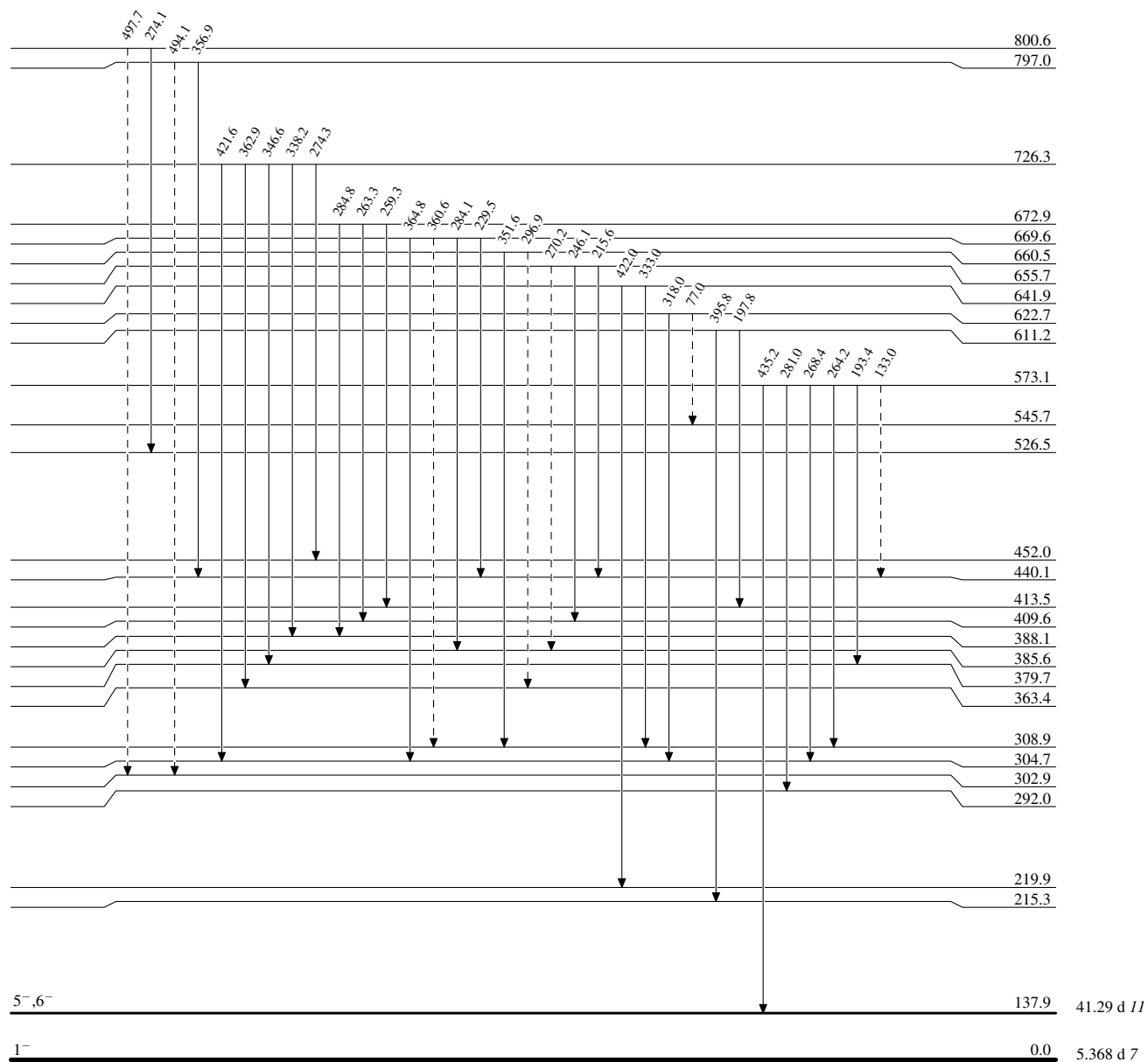
$E_i(\text{level})$	J_i^π	E_γ	E_f	J_f^π	$E_i(\text{level})$	E_γ	E_f	J_f^π	$E_i(\text{level})$	E_γ	E_f
409.6		271.7 5	137.9	5 ⁻ ,6 ⁻	545.7	253.7 [#] 5	292.0		622.7	318.0 5	304.7
		333.9 [#] 5	75.70	1 ⁻ ,2 ⁻		407.8 [#] 5	137.9	5 ⁻ ,6 ⁻	641.9	333.0 5	308.9
413.5		121.6 5	292.0		550.3	162.2 5	388.1			422.0 5	219.9
		337.7 5	75.70	1 ⁻ ,2 ⁻		186.9 5	363.4		655.7	215.6 5	440.1
440.1		131.2 5	308.9			247.4 5	302.9			246.1 5	409.6
		137.1 5	302.9			258.3 [#] 5	292.0			270.2 [#] 5	385.6
		148.1 5	292.0			412.4 5	137.9	5 ⁻ ,6 ⁻	660.5	296.9 [#] 5	363.4
		302.2 5	137.9	5 ⁻ ,6 ⁻	561.3	173.1 5	388.1			351.6 5	308.9
		364.4 5	75.70	1 ⁻ ,2 ⁻		181.5 5	379.7		669.6	229.5 5	440.1
452.0		88.6 5	363.4			341.6 5	219.9			284.1 5	385.6
		149.1 5	302.9			485.5 [#] 5	75.70	1 ⁻ ,2 ⁻		360.6 [#] 5	308.9
		160.0 5	292.0		564.2	154.6 5	409.6			364.8 5	304.7
		314.1 5	137.9	5 ⁻ ,6 ⁻		176.1 5	388.1		672.9	259.3 5	413.5
		376.3 5	75.70	1 ⁻ ,2 ⁻		184.5 5	379.7			263.3 5	409.6
526.5		112.9 5	413.5			200.8 5	363.4			284.8 5	388.1
		223.6 5	302.9			272.2 [#] 5	292.0		726.3	274.3 5	452.0
		311.1 5	215.3			426.3 5	137.9	5 ⁻ ,6 ⁻		338.2 5	388.1
529.4		119.8 5	409.6		573.1	133.0 [#] 5	440.1			346.6 5	379.7
		141.3 5	388.1			193.4 5	379.7			362.9 5	363.4
543.4		129.8 5	413.5			264.2 5	308.9			421.6 5	304.7
		328.3 5	215.3			268.4 5	304.7		797.0	356.9 5	440.1
		405.5 5	137.9	5 ⁻ ,6 ⁻		281.0 5	292.0			494.1 [#] 5	302.9
545.7		157.6 5	388.1			435.2 5	137.9	5 ⁻ ,6 ⁻	800.6	274.1 5	526.5
		166.0 5	379.7		611.2	197.8 5	413.5			497.7 [#] 5	302.9
		236.8 5	308.9			395.8 5	215.3				
		241.0 5	304.7		622.7	77.0 [#] 5	545.7				

[†] Additional information 2.[‡] From α data in ^{148}Pm IT decay.[#] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

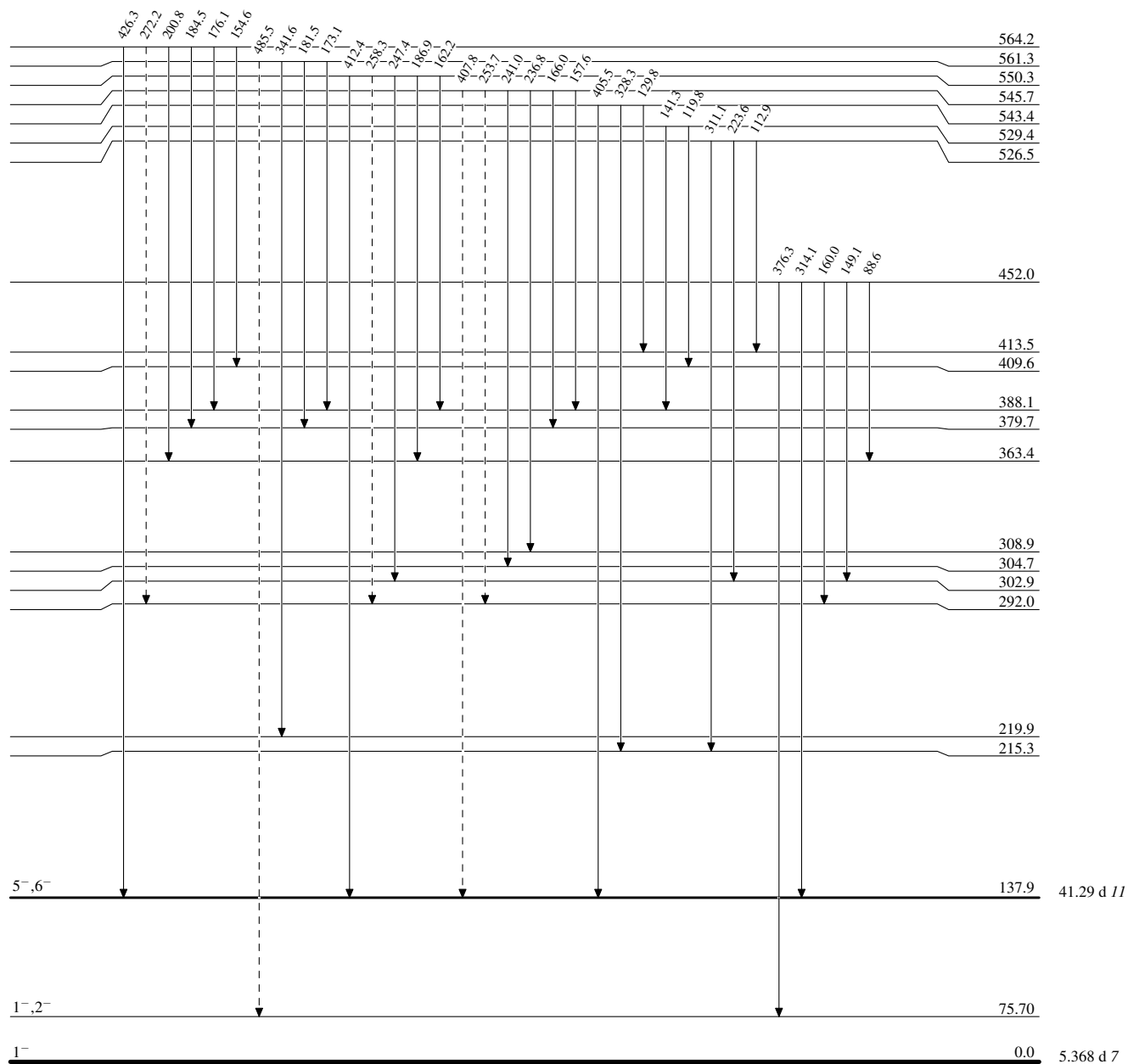
Level Scheme

-----► γ Decay (Uncertain)


Adopted Levels, Gammas

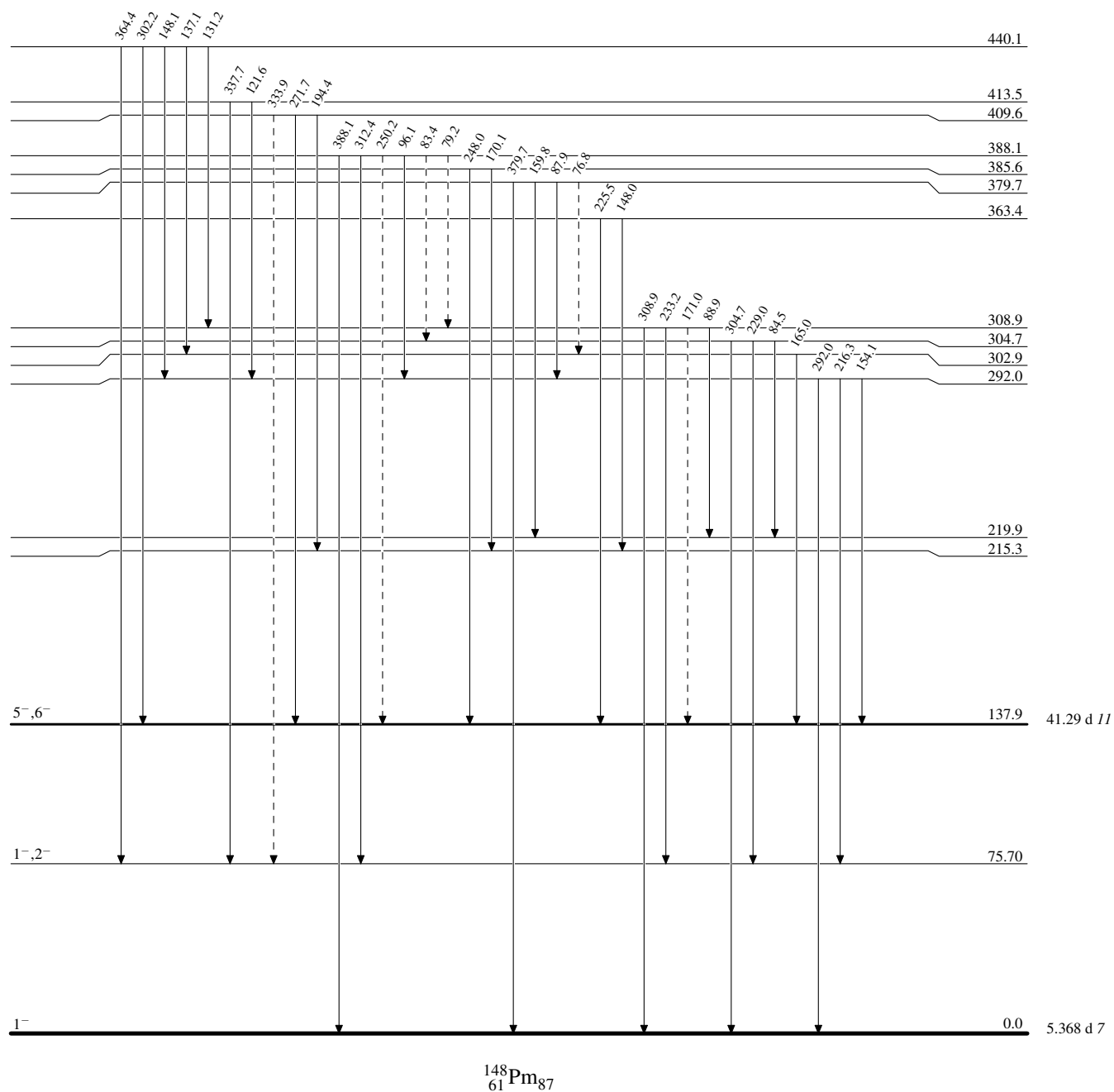
Legend

Level Scheme (continued)

-----► γ Decay (Uncertain)

 $^{148}_{61}\text{Pm}_{87}$

Legend

Adopted Levels, Gammas
Level Scheme (continued)

 -----► γ Decay (Uncertain)


Adopted Levels, Gammas

Level Scheme (continued)

