^{141}Pr(α,4nγ) 1985Ar19

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

E=47 MeV (1985Ar19), 49 MeV, 55 MeV (1980Pi03).
Measured: γ (1985Ar19,1980Pi03); $\gamma\gamma$, $\gamma(\theta)$, $\gamma\gamma$(t) (1985Ar19).

^{141}Pm Levels

E(level)	J$^{\pi}$[†]	$T_{1/2}$	Comments
0.0	$5/2^+$		
196.6	$7/2^+$		
403.8	$3/2^+$		
628.4	$11/2^-$	0.63 μs *2*	$T_{1/2}$: from 1985Ar19.
728.3	$3/2^+$		
837.1	$9/2^+$		
974.2	$11/2^+$		
1055.3?	$11/2^-$		
1108.0	$9/2^+$		
1166.6	$(9/2)^-$		
1313.3	$13/2^-$		
1359.6	11/2,7/2		
1414.5?	$(9/2^-)$		
1510.6	$15/2^-$		
1573.6			
1874.2			
1891.9	$(19/2^-)$		
1969.9	$15/2^{(+)}$		
2015.4	$15/2^-$		
2098.8			
2238.9	$19/2^-$		
2509.7	$19/2^-$		
2530.9		>2 μs	$T_{1/2}$: from 1985Ar19.
2554.3	$21/2^{(-)}$,$17/2^{(-)}$		
2623.8 *2*	$17/2^+$		
2640.9			
2703.7	$21/2^{(-)}$		

[†] Adopted values.

$\gamma(^{141}$Pm)

Unplaced γ's from 1985Ar19.

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
108.9[#] *2*		837.1	$9/2^+$	728.3	$3/2^+$		
140.6 *2*	10.3 *12*	2238.9	$19/2^-$	2098.8		D	Mult.: A_2=−0.13 *7*, A_4=−0.03 *10*.
[x]170.1 *3*	[†]						I_γ: 5.2 *6*, assuming I(431.9γ)=100.
196.6 *1*	138 *9*	196.6	$7/2^+$	0.0	$5/2^+$	D	Mult.: A_2=−0.06 *6*, A_4=−0.02 *7*.
197.3[#] *2*		1510.6	$15/2^-$	1313.3	$13/2^-$		
206.6 *2*		2098.8		1891.9	$(19/2^-)$		I_γ: weak.
208.7[#] *1*		837.1	$9/2^+$	628.4	$11/2^-$		
[x]218.6 *2*	3.1 *2*						

Continued on next page (footnotes at end of table)

^{141}Pr(α,4nγ) 1985Ar19 (continued)

$\gamma(^{141}Pm)$ (continued)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
260.3 *4*	6.3 *6*	1573.6		1313.3	13/2$^-$		
315.4 *1*	34 *1*	2554.3	21/2$^{(-)}$,17/2$^{(-)}$	2238.9	19/2$^-$	D	Mult.: A_2=−0.18 *5*, A_4=+0.02 *7*.
324.6 *1*	5.7 *1*	728.3	3/2$^+$	403.8	3/2$^+$	D	Mult.: A_2=−0.26 *7*, A_4=+0.02 *9*.
346.3 *2*	10.9 *4*	2238.9	19/2$^-$	1891.9	(19/2$^-$)	D	Mult.: A_2=−0.44 *3*, A_4=−0.01 *4*.
[x]354.8 *5*	†						I_γ: 8.3 *8*, assuming I(431.9γ)=100.
381.3 *1*	107 *3*	1891.9	(19/2$^-$)	1510.6	15/2$^-$	Q	Mult.: D based on A_2=−0.11 *3*, A_4=+0.02 *5* contradicts Q from Adopted Gammas.
401.5 *3*	7.8 *10*	2640.9		2238.9	19/2$^-$		E_γ,I_γ: from 1980Pi03.
403.8 *1*	2.7 *4*	403.8	3/2$^+$	0.0	5/2$^+$		
426.9 *1*	21 *1*	1055.3?	11/2$^-$	628.4	11/2$^-$	D+Q	Mult.: A_2=−0.39 *4*, A_4=+0.03 *5*.
431.6 *1*	100	628.4	11/2$^-$	196.6	7/2$^+$		Mult.: A_2=+0.02 *2*, A_4=+0.04 *4*.
455.1 *2*	7.8 *7*	1510.6	15/2$^-$	1055.3?	11/2$^-$	Q	Mult.: A_2=+0.30 *6*, A_4=+0.04 *8*.
464.8 *2*	5.1 *5*	2703.7	21/2$^{(-)}$	2238.9	19/2$^-$	D	Mult.: A_2=−0.22 *5*, A_4=+0.12 *7*.
538.2 *3*	4.0 *5*	1166.6	(9/2)$^-$	628.4	11/2$^-$		E_γ,I_γ: from 1980Pi03.
628.6 *1*	6.1 *4*	628.4	11/2$^-$	0.0	5/2$^+$		Mult.: A_2=+0.07 *3*, A_4=+0.04 *4*.
639.0 *1*	44 *1*	2530.9		1891.9	(19/2$^-$)		Mult.: A_2=−0.02 *3*, A_4=+0.02 *4*.
653.9 *2*	4.2 *5*	2623.8	17/2$^+$	1969.9	15/2$^{(+)}$	D	Mult.: A_2=−0.50 *7*, A_4=+0.08 *10*.
684.7 *2*	11.2 *4*	1313.3	13/2$^-$	628.4	11/2$^-$	D+Q	Mult.: A_2=−0.89 *2*, A_4=+0.08 *3*.
702.1 *1*	3.5 *3*	2015.4	15/2$^-$	1313.3	13/2$^-$	D	Mult.: A_2=−0.59 *2*, A_4=+0.01 *3*.
[x]723.3 *2*	22.3 *5*					Q	Mult.: A_2=+0.28 *3*, A_4=−0.02 *5*.
728.3[‡]	‡	728.3	3/2$^+$	0.0	5/2$^+$		E_γ,I_γ: not given in the table in 1985Ar19.
728.3[‡]	‡	2238.9	19/2$^-$	1510.6	15/2$^-$		E_γ,I_γ: not given in the table in 1985Ar19.
777.6 *1*	10.3 *2*	974.2	11/2$^+$	196.6	7/2$^+$	Q	Mult.: A_2=+0.32 *4*, A_4=+0.01 *6*.
785.3[‡] *2*	1.3[‡] *2*	1414.5?	(9/2$^-$)	628.4	11/2$^-$		Mult.: A_2=−0.93 *9*, A_4=+0.27 *12*.
785.3[‡] *2*	1.3[‡] *2*	2098.8		1313.3	13/2$^-$		Mult.: A_2=−0.93 *9*, A_4=+0.27 *12*.
837.1 *1*	3.1 *2*	837.1	9/2$^+$	0.0	5/2$^+$	Q	Mult.: A_2=+0.22 *8*, A_4=−0.06 *12*.
882.0 *1*	85 *2*	1510.6	15/2$^-$	628.4	11/2$^-$	Q	Mult.: A_2=+0.06 *2*, A_4=−0.02 *4*.
911.4 *2*	1.4 *2*	1108.0	9/2$^+$	196.6	7/2$^+$		
[x]990.8 *2*	16.0 *4*					D	Mult.: A_2=−0.22 *2*, A_4=+0.02 *3*.
995.7 *2*	4.8 *2*	1969.9	15/2$^{(+)}$	974.2	11/2$^+$	Q	Mult.: A_2=+0.41 *3*, A_4=+0.03 *4*.
998.9 *4*	11.7 *11*	2509.7	19/2$^-$	1510.6	15/2$^-$		E_γ,I_γ: from 1980Pi03.
1020.3 *3*	5.1 *2*	2530.9		1510.6	15/2$^-$		Mult.: A_2=−0.03 *3*, A_4=−0.04 *4*.
1037.2 *5*	1.5 *5*	1874.2		837.1	9/2$^+$		E_γ,I_γ: from 1980Pi03.
1067.9 *6*	5.9 *9*	2640.9		1573.6			E_γ,I_γ: from 1980Pi03.
1112.6 *2*	4.1 *2*	2623.8	17/2$^+$	1510.6	15/2$^-$	D	Mult.: A_2=−0.15 *4*, A_4=+0.18 *5*.
1163.0 *3*	1.5 *1*	1359.6	11/2,7/2	196.6	7/2$^+$	Q	Mult.: A_2=+0.15 *6*, A_4=+0.02 *9*.
1359.6 *4*		1359.6	11/2,7/2	0.0	5/2$^+$		I_γ: weak.

† From 1980Pi03.
‡ Multiply placed with undivided intensity.
# Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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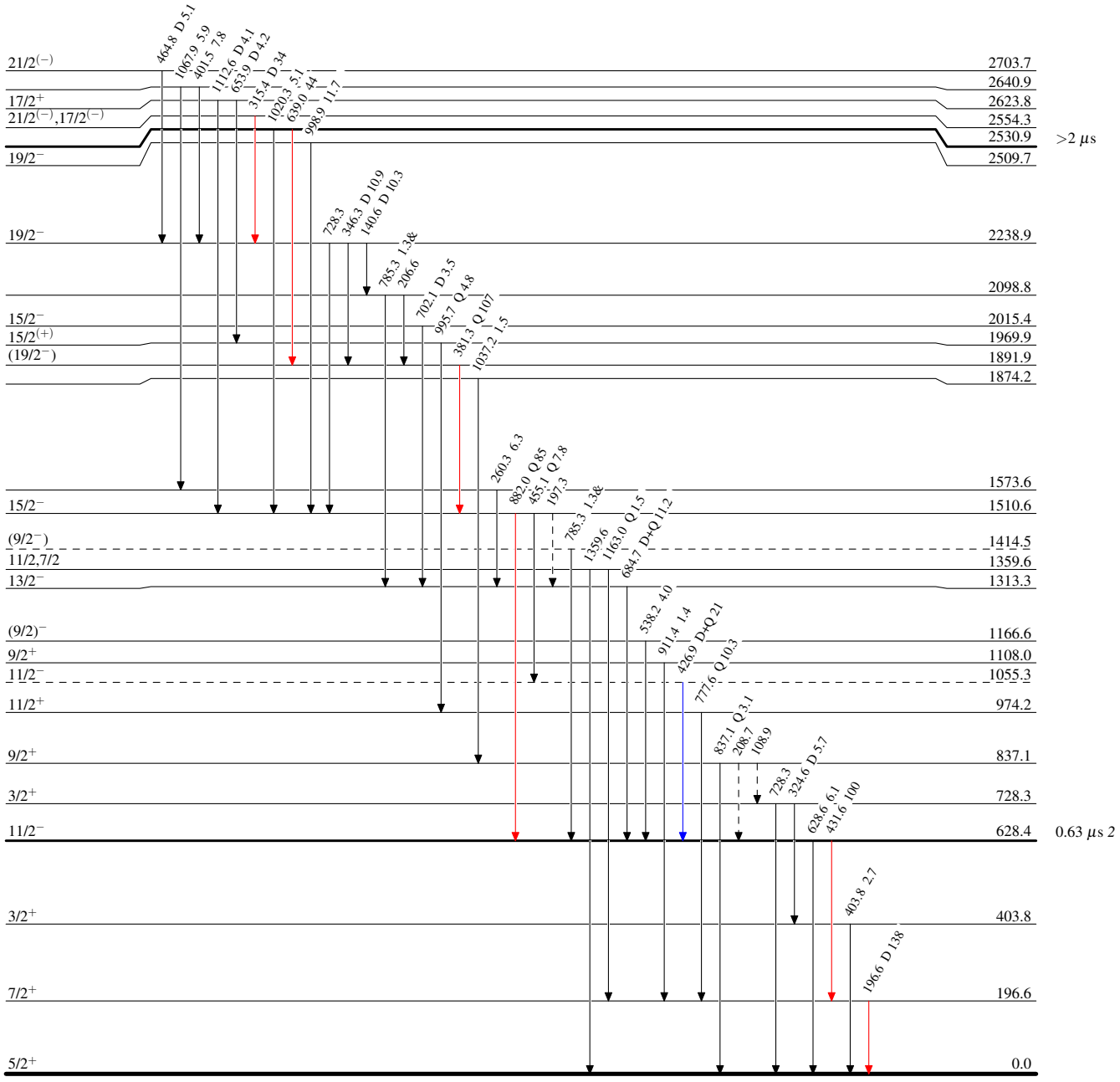
Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{141}_{61}Pm_{80}$