

$^{141}\text{Pr}(\text{}^3\text{He},3n\gamma)$  **1980Pi03**

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

E=19-27 MeV.

Measured:  $\gamma$ ,  $\gamma\gamma$ ,  $\gamma\gamma(t)$ ,  $\gamma(\theta)$ , ce, ce(t).

$^{141}\text{Pm}$  Levels

E(level)	$J^\pi$ <sup>†</sup>	Comments
0.0	5/2 <sup>+</sup>	
196.9	7/2 <sup>+</sup>	
403.9	3/2 <sup>+</sup>	
438.5	(1/2) <sup>+</sup>	
628.8	11/2 <sup>-</sup>	
728.3	3/2 <sup>+</sup>	
837.0	9/2 <sup>+</sup>	
858.6		
974.3	11/2 <sup>+</sup>	
1108.2	9/2 <sup>+</sup>	
1152.7	7/2 <sup>+</sup>	
1167.0	(9/2) <sup>-</sup>	
1313.3	13/2 <sup>-</sup>	
1414.5		
1510.8	15/2 <sup>-</sup>	
1573.6		
1874.2		
1970.1	15/2 <sup>(+)</sup>	
2015.1	15/2 <sup>-</sup>	
2098.9		
2137.3		
2238.9	19/2 <sup>-</sup>	
2361.4		
2509.7	19/2 <sup>-</sup>	
2623.4		E(level): may be identical with 2623.5 level.
2623.5		
2640.4		

<sup>†</sup> Adopted values.

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

$E_\gamma$	$I_\gamma$ <sup>‡</sup>	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>†‡</sup>	Comments
196.88 5	1392 70	196.9	7/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>		Mult.: $A_2=-0.01$ 2, $A_4=+0.02$ 3.
197.5 5	6 4	1510.8	15/2 <sup>-</sup>	1313.3	13/2 <sup>-</sup>		
247.5 4	8 3	1414.5		1167.0	(9/2) <sup>-</sup>		
260.3 4	14 3	1573.6		1313.3	13/2 <sup>-</sup>		
324.53 15	25 4	728.3	3/2 <sup>+</sup>	403.9	3/2 <sup>+</sup>		
<sup>x</sup> 347.6 4	19 3						
<sup>x</sup> 354.8 5	11 3						
391.3 3	18 3	2361.4		1970.1	15/2 <sup>(+)</sup>		
401.5 3	22 3	2640.4		2238.9	19/2 <sup>-</sup>		
403.85 10	106 10	403.9	3/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>	M1+E2	Mult.: $A_2=-0.07$ 3, $A_4=-0.04$ 4; $\alpha(\text{K})_{\text{exp}}=0.025$ 4.
431.9 3	1000	628.8	11/2 <sup>-</sup>	196.9	7/2 <sup>+</sup>	M2	Mult.: $A_2=+0.01$ 1, $A_4=+0.01$ 1; $\alpha(\text{K})_{\text{exp}}=0.077$ 15.
438.45 20	15 3	438.5	(1/2) <sup>+</sup>	0.0	5/2 <sup>+</sup>		
531.4 4	13 3	728.3	3/2 <sup>+</sup>	196.9	7/2 <sup>+</sup>		

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$^{141}\text{Pr}(\text{}^3\text{He}, 3\text{n}\gamma)$  **1980Pi03 (continued)** $\gamma(^{141}\text{Pm})$  (continued)

$E_\gamma$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. $^\ddagger$	$\delta^\#$	Comments
538.2 3	89 14	1167.0	(9/2) <sup>-</sup>	628.8	11/2 <sup>-</sup>	M1+E2		Mult.: $A_2=-0.26$ 2, $A_4=+0.04$ 3; $\alpha(\text{K})\text{exp}=0.012$ 3.
608.3 3	33 4	2623.4		2015.1	15/2 <sup>-</sup>	(E2)		Mult.: $\alpha(\text{K})\text{exp}=0.005$ 2.
628.7 3	63 6	628.8	11/2 <sup>-</sup>	0.0	5/2 <sup>+</sup>	E3		Mult.: $A_2=+0.07$ 8, $A_4=+0.11$ 12; $\alpha(\text{K})\text{exp}=0.014$ 2.
653.4 5	35 4	2623.5		1970.1	15/2 <sup>(+)</sup>	E2+(M1)		Mult.: $\alpha(\text{K})\text{exp}=0.0064$ 12.
661.7 5	7 3	858.6		196.9	7/2 <sup>+</sup>			
684.49 10	305 18	1313.3	13/2 <sup>-</sup>	628.8	11/2 <sup>-</sup>	M1+E2	-0.87 8	Mult.: $A_2=-0.71$ 3, $A_4=+0.09$ 2; $\alpha(\text{K})\text{exp}=0.0062$ 8.
701.8 3	49 6	2015.1	15/2 <sup>-</sup>	1313.3	13/2 <sup>-</sup>	M1+E2	-1.6 3	Mult.: $A_2=-0.66$ 6, $A_4=+0.26$ 10; $\alpha(\text{K})\text{exp}=0.0061$ 11.
<sup>x</sup> 707.6 5	21 3							
<sup>x</sup> 725.4 4	19 5							
728.1 @ 3	@	728.3	3/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>			
728.1 3	206 14	2238.9	19/2 <sup>-</sup>	1510.8	15/2 <sup>-</sup>	E2		Mult.: $A_2=+0.07$ 2, $A_4=+0.02$ 3; $\alpha(\text{K})\text{exp}=0.0040$ 7.
777.38 10	306 18	974.3	11/2 <sup>+</sup>	196.9	7/2 <sup>+</sup>	E2		Mult.: $A_2=+0.18$ 2, $A_4=0.0$ ; $\alpha(\text{K})\text{exp}=0.0038$ 6.
785.6 5	77 11	2098.9		1313.3	13/2 <sup>-</sup>	M1+E2	-0.19 8	Mult.: $A_2=-0.48$ 5, $A_4=+0.05$ 9.
837.0 1	181 14	837.0	9/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>	E2		Mult.: $\alpha(\text{K})\text{exp}=0.0021$ 5.
858.55 15	54 8	858.6		0.0	5/2 <sup>+</sup>	(E2)		Mult.: $\alpha(\text{K})\text{exp}=0.0037$ 7.
882.03 15	562 40	1510.8	15/2 <sup>-</sup>	628.8	11/2 <sup>-</sup>	E2		Mult.: $+0.23$ 2, $A_4=-0.05$ 3; $\alpha(\text{K})\text{exp}=0.0024$ 4.
911.33 20	91 8	1108.2	9/2 <sup>+</sup>	196.9	7/2 <sup>+</sup>	(E2+M1)		Mult.: $\alpha(\text{K})\text{exp}=0.0016$ 5.
955.7 6	25 7	1152.7	7/2 <sup>+</sup>	196.9	7/2 <sup>+</sup>			
<sup>x</sup> 962.6 5	10 3							
995.8 3	125 11	1970.1	15/2 <sup>(+)</sup>	974.3	11/2 <sup>+</sup>	(E2)		Mult.: $A_2=+0.42$ 9, $A_4=-0.01$ 13; $\alpha(\text{K})\text{exp}=0.0015$ 6 (995.8 $\gamma$ +998.9 $\gamma$ ).
998.9 4	74 7	2509.7	19/2 <sup>-</sup>	1510.8	15/2 <sup>-</sup>	E2		Mult.: $A_2=+0.42$ 9, $A_4=-0.01$ 13; $\alpha(\text{K})\text{exp}=0.0015$ 6 (998.9 $\gamma$ +995.8 $\gamma$ ).
1037.2 5	42 6	1874.2		837.0	9/2 <sup>+</sup>			
1067.9 6	32 5	2640.4		1573.6				
1108.2 6	15 3	1108.2	9/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>			
1112.6 5	46 7	2623.5		1510.8	15/2 <sup>-</sup>			
1163.0 10	64 12	2137.3		974.3	11/2 <sup>+</sup>			

$^\ddagger$   $\alpha(\text{K})\text{exp}$  were normalized to  $\alpha(\text{K})(\text{E}2)$  for 525.1 $\gamma$  in  $^{142}\text{Nd}$ .

$^\ddagger$  Measured at  $E(^3\text{He})=27$  MeV.

$^\#$  From  $\gamma(\theta)$ .

@ Multiply placed with undivided intensity.

<sup>x</sup>  $\gamma$  ray not placed in level scheme.

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## Level Scheme

Intensities: Type not specified

## Legend

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

