^{142}Pm IT decay 1976Fu07,1975KeZN

History

Type	Author	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

Parent: ^{142}Pm: E=883.17 *16*; $J^\pi=(8)^-$; $T_{1/2}$=2.0 ms *2*; %IT decay=100.0

Measured: γ (1976Fu07,1975KeZN,1974KeZE,1972Ra42), $\gamma\gamma$ (1976Fu07,1975KeZN), $\gamma(\theta)$ (1976Fu07), ce (1976Fu07,1975KeZN,1972Ra42), γ(t), Ce(t) (1976Fu07,1975KeZN,1972Ra42).

The level scheme is from 1976Fu07; a level at 926 (10^+) was introduced earlier by evaluators to account for 67−μs activity observed in 1975KeZN. The isomer has recently been placed at 2828 in (HI,xnγ).

For details on Iγ see ^{142}Nd(d,2n).

E(α)=38 MeV in (α,3nγ).

^{142}Pm Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	1^+		
208.52 *9*	$(2)^+$		
240.98 *9*	$(3)^+$	1.1 ns *3*	
412.02 *13*	$(3)^+$		
449.48 *13*	$(5)^+$	16.5 ns *15*	
883.18 *24*	$(8)^-$	2.0 ms *2*	$T_{1/2}$: observed in (p,n), (d,2n), (α,3n), (^{10}B,4n) (1972Ra42,1975KeZN,1976Fu07).
926.2? *11*	(10^+)	67 μs *5*	$T_{1/2}$: observed by 1975KeZN, 1974KeZE only in (α,3nγ) (E=25-55 MeV) and (^{10}B,4nγ). Not observed in (d,2n) or (p,n), (p,2n).

[†] Adopted values.

$\gamma(^{142}Pm)$

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	Comments
32.45 *10*	240.98	$(3)^+$	208.52	$(2)^+$	M1	6.31 *11*	α(L)=4.97 *9*; α(M)=1.061 *18*; α(N+..)=0.277 *5* α(N)=0.239 *4*; α(O)=0.0360 *6*; α(P)=0.00225 *4* Mult.: from balance of I(γ+ce) in delayed γ spectra.
(37.5)	449.48	$(5)^+$	412.02	$(3)^+$			
43	926.2?	(10^+)	883.18	$(8)^-$	[M2]	131.5	B(M2)(W.u.)=0.85 *12* α(L)=101.6 *15*; α(M)=23.7 *4*; α(N+..)=6.18 *9* α(N)=5.37 *8*; α(O)=0.770 *11*; α(P)=0.0387 *6* E_γ: from 1975KeZN.
203.5 *1*	412.02	$(3)^+$	208.52	$(2)^+$	M1,E2	0.201 *11*	α(K)=0.160 *20*; α(L)=0.032 *8*; α(M)=0.0071 *18*; α(N+..)=0.0018 *5* α(N)=0.0016 *4*; α(O)=0.00022 *5*; α(P)=9.3×10^{-6} *23* Mult.: α(K)exp=0.3 *2*, $\gamma(\theta)$ A_2=−0.06 *4*.
208.5 *1*	208.52	$(2)^+$	0.0	1^+	M1	0.198	α(K)=0.1681 *24*; α(L)=0.0233 *4*; α(M)=0.00497 *7*; α(N+..)=0.001301 *19* α(N)=0.001121 *16*; α(O)=0.0001693 *24*; α(P)=1.076×10^{-5} *16* Mult.: α(K)exp=0.15 *3*, $\gamma(\theta)$ A_2=−0.03 *1* (1976Fu07), K/LM=5.83 *16* (1972Ra42).
208.5 *1*	449.48	$(5)^+$	240.98	$(3)^+$	E2	0.1759	α(K)=0.1297 *19*; α(L)=0.0361 *6*; α(M)=0.00810 *12*; α(N+..)=0.00203 *3* α(N)=0.00178 *3*; α(O)=0.000240 *4*; α(P)=6.57×10^{-6} *10* Mult.: K/LM=2.94 *8* (1972Ra42).
241.0 *1*	240.98	$(3)^+$	0.0	1^+	E2	0.1091	α(K)=0.0828 *12*; α(L)=0.0206 *3*; α(M)=0.00458 *7*; α(N+..)=0.001152 *17* α(N)=0.001010 *15*; α(O)=0.0001380 *20*; α(P)=4.32×10^{-6} *6*

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^{142}Pm IT decay 1976Fu07,1975KeZN (continued)

$\gamma(^{142}Pm)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
433.7 *2*	883.18	$(8)^-$	449.48	$(5)^+$	E3	0.0559	Mult.: α(K)exp=0.080 *25*, $\gamma(\theta)$ A_2=+0.12 *1* (1976Fu07); K/LM=3.29 *8* (1972Ra42). B(E3)(W.u.)=0.166 *17* α(K)=0.0407 *6*; α(L)=0.01183 *17*; α(M)=0.00267 *4*; α(N+..)=0.000675 *10* α(N)=0.000591 *9*; α(O)=8.11×10^{-5} *12*; α(P)=2.46×10^{-6} *4* Mult.: L/LM=2.82 *8* (1972Ra42).

† Additional information 1.

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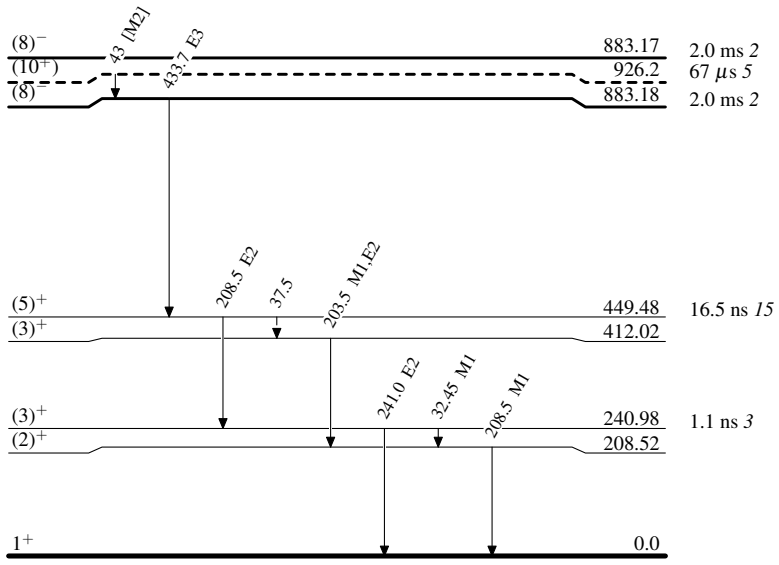
Decay Scheme

%IT=100.0



$^{142}_{61}Pm_{81}$