^{143}Sm ε decay (8.75 min) 1974FiZF,1973McZZ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 113, 715 (2012)	31-May-2011

Parent: ^{143}Sm: E=0.0; $J^\pi=3/2^+$; $T_{1/2}$=8.75 min *6*; Q(ε)=3443 *4*; %ε+%$β^+$ decay=100.0

Measured: γ rays (1974FiZF,1972De23,1970De29,1969He10), γγ coin (1974FiZF,1972De23,1968Bl12), γ(t) (1968He05), $β^+$ (1983Al06,1972De23,1966Be21).

^{143}Pm Levels

E(level)†	Jπ‡	$T_{1/2}$	Comments
0.0	$5/2^+$		
272.11 *5*	$7/2^+$	1.06 ns *8*	$T_{1/2}$: from 1968He05.
1056.63 *6*	$3/2^+$		
1173.19 *7*	$1/2^+$		
1403.07 *7*	$3/2^+$		
1515.00 *6*	$3/2^+$,$5/2^+$		
1613.92 *16*	$5/2^+$,$3/2^+$		
1753.46 *10*	$1/2^+$		
1816.89 *8*			
1854.10 *9*			
2080.83 *10*			
2274.5?	$3/2^+$,$5/2^+$		
2280.99 *11*	$(5/2)^+$		
2444.08 *11*			
2464.96 *11*			
2613.53 *17*			
2731.6 *6*			
2905.4 *5*			

† From least-squares fit to γ-ray energies.
‡ From Adopted Levels.

ε,$β^+$ radiations

εK/$β^+$=0.98 *9* (1966Be21). Others: 1.27 *11* (1972Ev01), 0.92 *9* (1970Bi02).
I($γ^±$)/I(1056γ)=46 *5* (1970De29); other: 39 (1966Be21).

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)‡	Comments
(538 *4*)	2905.4		0.009 *3*	7.01 *15*	0.009 *3*	εK=0.8272; εL=0.1337; εM+=0.03903 *5*
(711 *4*)	2731.6		0.005 *3*	7.5 *3*	0.005 *3*	εK=0.8327; εL=0.1297; εM+=0.03764
(829 *4*)	2613.53		0.05 *1*	6.67 *9*	0.05 *1*	εK=0.8350; εL=0.1279; εM+=0.03705
(978 *4*)	2464.96		0.005 *3*	7.8 *3*	0.005 *3*	εK=0.8371; εL=0.1264; εM+=0.03653
(999 *4*)	2444.08		0.03 *1*	7.06 *15*	0.03 *1*	εK=0.8373; εL=0.1262; εM+=0.03647
(1162 *4*)	2280.99		0.02 *1*	7.37 *22*	0.02 *1*	εK=0.8389; εL=0.1250; εM+=0.03607
(1362 *4*)	2080.83		0.02 *1*	7.51 *22*	0.02 *1*	εK=0.8396; εL=0.1239; εM+=0.03569
(1589 *4*)	1854.10	0.0002 *1*	0.03 *1*	7.47 *15*	0.03 *1*	av Eβ=265.8 *18*; εK=0.8362; εL=0.1224; εM+=0.03521
(1626 *4*)	1816.89	0.00079 *16*	0.099 *20*	6.97 *9*	0.10 *2*	av Eβ=282.1 *18*; εK=0.8349; εL=0.1221; εM+=0.03511
(1690 *4*)	1753.46	0.00014 *3*	0.012 *3*	7.93 *11*	0.012 *3*	av Eβ=309.9 *18*; εK=0.8322; εL=0.1214; εM+=0.03492
(1829 *4*)	1613.92	0.0009 *2*	0.04 *1*	7.48 *11*	0.04 *1*	av Eβ=371.0 *18*; εK=0.8231; εL=0.1197; εM+=0.03440
(1928 *4*)	1515.00	0.041 *3*	1.2 *1*	6.06 *4*	1.2 *1*	av Eβ=414.4 *18*; εK=0.8139; εL=0.1181; εM+=0.03393
(2040 *4*)	1403.07	0.02 *1*	0.4 *1*	6.59 *11*	0.4 *1*	av Eβ=463.6 *18*; εK=0.8005; εL=0.1159; εM+=0.03329
(2270 *4*)	1173.19	0.05 *1*	0.5 *1*	6.61 *9*	0.5 *1*	av Eβ=565.0 *18*; εK=0.7626 *8*; εL=0.10997 *12*;

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ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)‡	Comments
						εM+=0.03157 *4*
(2386 *4*)	1056.63	0.29 *4*	2.0 *3*	6.01 *6*	2.3 *3*	av Eβ=616.6 *18*; εK=0.7383 *9*; εL=0.10630 *14*; εM+=0.03051 *4*
(3171# *4*)	272.11	<0.02	<0.02	>8.2	<0.04	av Eβ=969.0 *19*; εK=0.5253 *12*; εL=0.07503 *17*; εM+=0.02151 *5*
3437† *30*	0.0	44.5 *4*	50.8 *4*	4.927 *5*	95.3 *5*	av Eβ=1092.9 *19*; εK=0.4501 *11*; εL=0.06416 *16*; εM+=0.01839 *5*

† Measured: Eβ+=2415 *30* (1983Al06). Others: 2439 *40* (1995Ve05), 2470 *30* (1966Be21), 2440 *250* (1972De23). Eβ+=2890 *250* and 1900 *250* in 1972De23 seem incorrect.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

γ(^{143}Pm)

Iγ normalization: Deduced by evaluators from decay scheme,using theoretical β+/ε ratios and I(γ±)/I(1056γ)=4.59 *46* (1970De29).

Eγ ‡	Iγ ‡#	Ei(level)	J_i^π	Ef	J_f^π	Mult.	δ	α@	Comments
272.18 *5*	16.0 *16*	272.11	7/2+	0.0	5/2+	M1+(E2)	<0.15	0.097	α(K)=0.0817 *12*; α(L)=0.01130 *16*; α(M)=0.00241 *4*; α(N+..)=0.00063 *1* Mult.: From Adopted Gammas.
458.11 *15*	1.9 *2*	1515.00	3/2+,5/2+	1056.63	3/2+				
797.49 *15*	0.8 *2*	1854.10		1056.63	3/2+				
1056.58 *7*	100	1056.63	3/2+	0.0	5/2+				
1173.18 *7*	21.9 *17*	1173.19	1/2+	0.0	5/2+				
1242.95 *7*	11.5 *5*	1515.00	3/2+,5/2+	272.11	7/2+				
1341.81 *15*	1.5 *4*	1613.92	5/2+,3/2+	272.11	7/2+				
1403.06 *7*	18.4 *10*	1403.07	3/2+	0.0	5/2+				
1514.98 *7*	34.7 *15*	1515.00	3/2+,5/2+	0.0	5/2+				
1544.87 *10*	2.7 *3*	1816.89		272.11	7/2+				
1753.45 *10*	0.5 *1*	1753.46	1/2+	0.0	5/2+				
1808.64 *25*	0.07 *3*	2080.83		272.11	7/2+				
1816.78 *10*	1.3 *3*	1816.89		0.0	5/2+				
1854.08 *10*	0.6 *1*	1854.10		0.0	5/2+				
2002.5&		2274.5?	3/2+,5/2+	272.11	7/2+				Eγ: from 1969He10; not observed in 1970De29.
2008.87 *10*	0.8 *2*	2280.99	(5/2)+	272.11	7/2+				
2080.83 *10*	0.7 *2*	2080.83		0.0	5/2+				
2171.95 *10*	0.8 *1*	2444.08		272.11	7/2+				
2192.84 *10*	0.2 *1*	2464.96		272.11	7/2+				
2342.2 *3*	0.3 *1*	2613.53		272.11	7/2+				
2444.2 *4*	0.4 *2*	2444.08		0.0	5/2+				
2459.5 *6*	0.2 *1*	2731.6		272.11	7/2+				
2613.15 *20*	1.9 *3*	2613.53		0.0	5/2+				
2633.4 *5*	0.3 *1*	2905.4		272.11	7/2+				
2904† *2*	0.07 *2*	2905.4		0.0	5/2+				

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γ(^{143}Pm) (continued)

† Observed only in 1970De29.
‡ From 1974FiZF. Uncertainties in Iγ are statistical only.
# For absolute intensity per 100 decays, multiply by 0.0239 *25*.
@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
& Placement of transition in the level scheme is uncertain.

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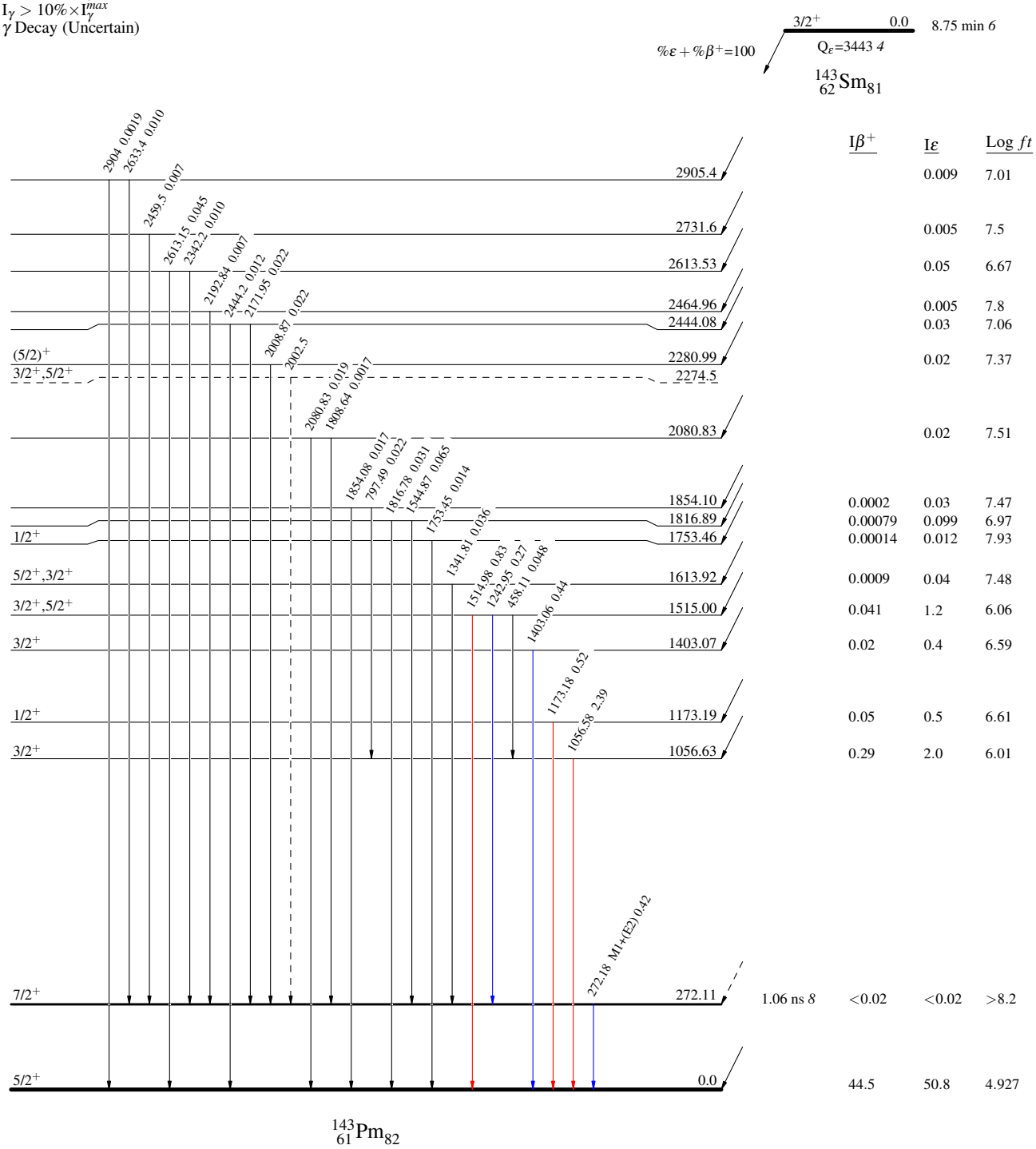
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

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)



$^{143}_{61}Pm_{82}$