^{144}Sm(α,p3nγ), ^{147}Sm(p,4nγ) 1981Ha25

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 93, 599 (2001)	1-Dec-2000

(α,p3nγ): E=50 MeV, measured γ, γγ, γ(t), γ(θ).
(p,4nγ): E=40 MeV, measured γ, ce.

^{144}Eu Levels

E(level)	J^{π}†	$T_{1/2}$	Comments
0.0	1^+		
333.3 *2*	2^+		
347.2 *2*	3^+		
580.6 *4*	4^+		
762.8 *5*	5^+		
887.6 *5*	5^-		
926.1 *7*	6^-	27.3 ns *30*	
1120.2 *10*	7^-		
1127.7 *10*	8^-	1.0 μs	
1194.2 *10*	$(6,7)^-$		
1338.0 *15*	9^-	5.0 ns *5*	
1669.4 *15*	$(9)^+$		
2161.4 *20*	$(10)^+$		See Comments on 1669.7+u and 2162.0+u levels in Adopted Levels section.

† From 1981Ha25 based upon γ multipolarities, γ(θ) and earlier assignments by 1976Fu07.

γ(^{144}Eu)

E_γ	I_γ	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.†	α‡	$I_{(\gamma+ce)}$	Comments
7.5		1127.7	8^-	1120.2	7^-			3×10^2 *1*	$I_{(\gamma+ce)}$: from intensity balance. E_γ: transition not seen but required by γγ data.
13.9		347.2	3^+	333.3	2^+			3.0×10^2 *15*	$I_{(\gamma+ce)}$: from intensity balance. E_γ: transition not seen but required by γγ data.
38.7 *3*	80 *50*	926.1	6^-	887.6	5^-	(M1+E2)	12 *8*		Mult.: from α(exp) derived from intensity balance.
124.8 *2*	30 *6*	887.6	5^-	762.8	5^+				
163.1 *5*	30 *20*	926.1	6^-	762.8	5^+				
^{x}164.5 *4*	65 *20*					D			
182.4 *2*	110 *20*	762.8	5^+	580.6	4^+				
194.1 *4*	2.7×10^2 *10*	1120.2	7^-	926.1	6^-	M1	0.291		α(K)= 0.2464; α(L)= 0.0348; α(M)=0.00750; α(N+..)=0.00212
201.6 *5*	4.7×10^2 *15*	1127.7	8^-	926.1	6^-	E2	0.2106		α(K)= 0.1493; α(L)= 0.0475; α(M)=0.01083; α(N+..)=0.00294
^{x}208									
210.3 *3*	300 *50*	1338.0	9^-	1127.7	8^-	M1	0.2335		α(K)= 0.1979; α(L)= 0.0278; α(M)=0.00600; α(N+..)=0.00169
233.3 *2*	1000 *50*	580.6	4^+	347.2	3^+	M1	0.1761		α(K)= 0.1494; α(L)=0.02094; α(M)=0.00451; α(N+..)=0.00127
247.5 *5*	75 *35*	580.6	4^+	333.3	2^+				

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$^{144}Sm(\alpha,p3n\gamma)$, $^{147}Sm(p,4n\gamma)$ 1981Ha25 (continued)

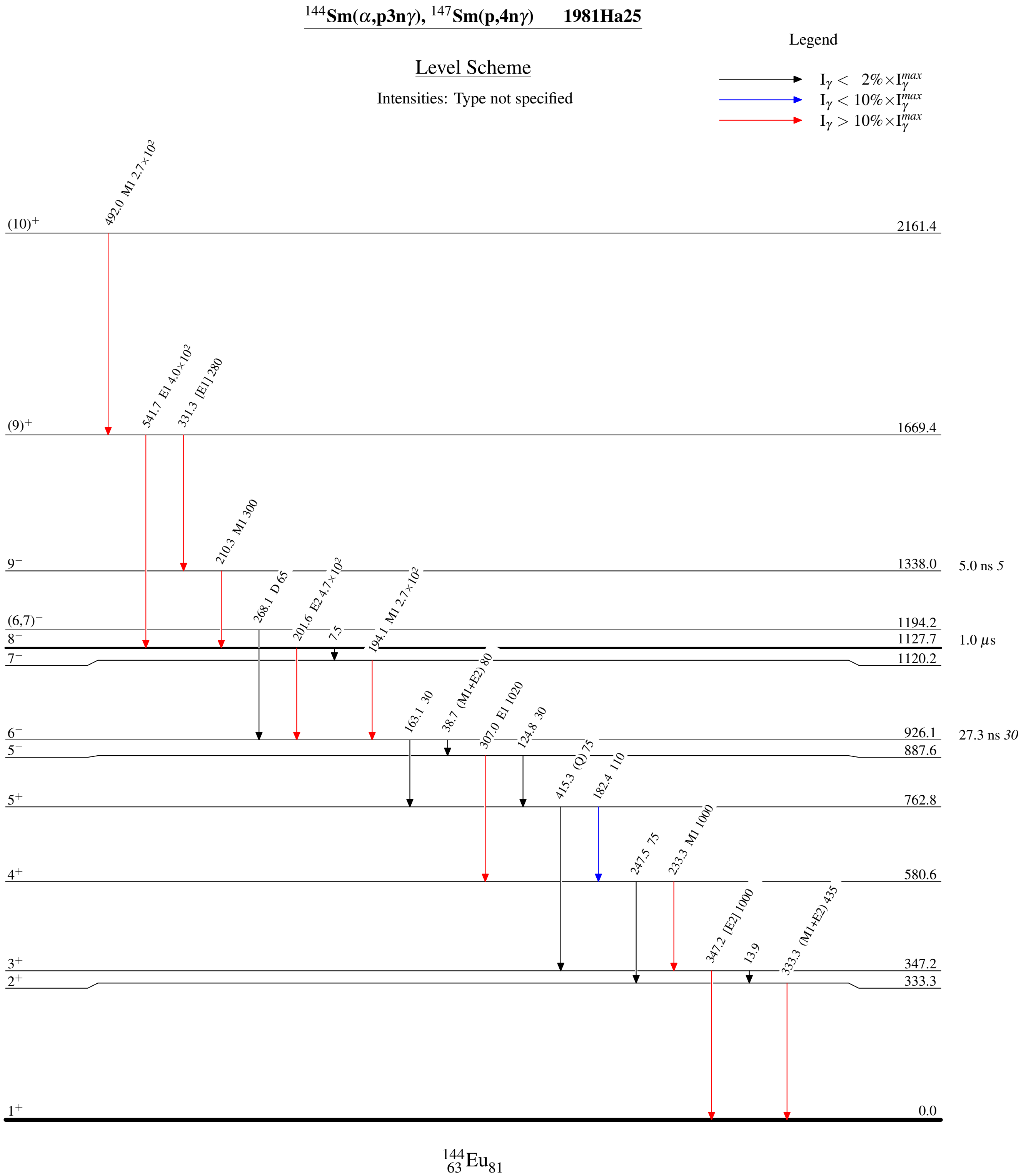
$\gamma(^{144}Eu)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
268.1 *3*	65 *20*	1194.2	$(6,7)^-$	926.1	6^-	D		
307.0 *2*	1020 *50*	887.6	5^-	580.6	4^+	E1	0.01448	α(K)=0.01233; α(L)=0.00169; α(M)=0.00036
331.3 *2*	280 *30*	1669.4	$(9)^+$	1338.0	9^-	[E1]	0.01198	α(K)=0.01021; α(L)=0.00139; α(M)=0.00030 Mult.: (D,Q) from $\gamma(\theta)$.
333.3 *2*	435 *50*	333.3	2^+	0.0	1^+	(M1+E2)		α(K)exp=0.042 *9*
347.2 *2*	1000	347.2	3^+	0.0	1^+	[E2]	0.0376	α(K)= 0.0296; α(L)=0.00623; α(M)=0.00138; α(N+..)=0.00038
415.3 *3*	75 *30*	762.8	5^+	347.2	3^+	(Q)		
492.0 *5*	2.7×10^2 *10*	2161.4	$(10)^+$	1669.4	$(9)^+$	M1	0.02476	α(K)=0.02107; α(L)=0.00290; α(M)=0.00062; α(N+..)=0.00017
541.7 *4*	4.0×10^2 *10*	1669.4	$(9)^+$	1127.7	8^-	E1	0.00380	α(K)=0.00323; α(L)=0.00043
^{x}550.1 *5*	90 *45*					D		
^{x}717 *2*	≈90							I_γ: from $\gamma\gamma$.
^{x}742 *2*	≈100							I_γ: from $\gamma\gamma$.
^{x}1209 *2*	<20							

† From $\gamma(\theta)$ and ce.

‡ 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.

^{x} γ ray not placed in level scheme.


^{144}Sm(α,p3nγ), ^{147}Sm(p,4nγ) 1981Ha25
Level Scheme
Intensities: Type not specified
Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
(10)+ 2161.4
492.0 M1 2.7×10²
(9)+ 1669.4
541.7 E1 4.0×10²
331.3 [E1] 280
9− 1338.0 5.0 ns 5
210.3 M1 300
268.1 D 65
201.6 E2 4.7×10²
7.5
194.1 M1 2.7×10²
(6,7)− 1194.2
8− 1127.7 1.0 μs
7− 1120.2
163.1 30
38.7 (M1+E2) 80
307.0 E1 1020
124.8 30
6− 926.1 27.3 ns 30
5− 887.6
415.3 (Q) 75
182.4 110
5+ 762.8
247.5 75
233.3 M1 1000
4+ 580.6
347.2 [E2] 1000
13.9
333.3 (M1+E2) 435
3+ 347.2
2+ 333.3
1+ 0.0
$^{144}_{63}Eu_{81}$