

^{143}Sm IT decay (30 ms) [1969Ne04,1974Ko29,1983KoZU](#)

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

Parent: ^{143}Sm : E=2793.8 13; $J^\pi=23/2^{-}$; $T_{1/2}=30$ ms 3; %IT decay=100.0

Produced in Te+Ne with E(Ne)=80-110 MeV ([1969Ne04](#)); $^{142}\text{Nd}(\alpha,3n\gamma)$ E=43-52 MeV ([1974Ko29](#)), $^{142}\text{Nd}(^3\text{He},2n\gamma)$ and $^{143}\text{Nd}(^3\text{He},3n\gamma)$ ([1983Ko24](#)).

Measured: γ , $\gamma(t)$ ([1969Ne04,1974Ko29,1983KoZU](#)), $\gamma\gamma$ ([1973VaYZ,1974Ko29,1983KoZU](#)), ce([1969Ne04,1983KoZU](#)), $\gamma(\theta)$ ([1983KoZU](#)).

 ^{143}Sm Levels

E(level)	$J^\pi^\dagger$	$T_{1/2}$	Comments
0.0	$3/2^+$	66 s 2	
754.8	$11/2^-$		
2328.2	$13/2^{-}$		
2330			
2460.3	$13/2^{+}$	30 ms 3	$T_{1/2}$: from 1969Ne04 .
2510.2	$15/2^{+}$		
2586.7	$17/2^{+}$		
2794.7	$23/2^{-}$		

† Adopted values.

 $\gamma(^{143}\text{Sm})$

I γ normalization: Deduced using $I(\gamma+\text{ce})(1573\gamma+1705\gamma+1831\gamma)=100$.

$E_\gamma^\ddagger$	$I_\gamma^{\#\&}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	$\alpha^\ddagger$	Comments
51 1		2510.2	$15/2^{+}$	2460.3	$13/2^{+}$			E_γ : observed in 1969Ne04, 1983KoZU ; ce(L)(51 γ)/ce(L)(76.5 γ)=0.48 15 (1969Ne04).
76.5	26 7	2586.7	$17/2^{+}$	2510.2	$15/2^{+}$	M1	3.65	$\alpha(K)=3.09$ 5; $\alpha(L)=0.440$ 7; $\alpha(M)=0.0947$ 14; $\alpha(N+..)=0.0249$ 4 $\alpha(N)=0.0215$ 3; $\alpha(O)=0.00321$ 5; $\alpha(P)=0.000198$ 3 Mult.: $\alpha=4.2$ 4 from balance of $I(\gamma+\text{ce})$ for 2510 level (1974Ko29); $\alpha=5.5$ 10 from balance of $I(\gamma+\text{ce})$ for 2586 level. They can be compared with $\alpha(E2)=6.40$ and $\alpha(M1)=3.72$.
180.3 @		2510.2	$15/2^{+}$	2330				$\alpha(K)=0.0459$ 7; $\alpha(L)=0.00639$ 9; $\alpha(M)=0.001366$ 20; $\alpha(N+..)=0.000353$ 5 $\alpha(N)=0.000306$ 5; $\alpha(O)=4.44\times 10^{-5}$ 7; $\alpha(P)=2.40\times 10^{-6}$ 4 Mult.: from comparison of I_γ and ce for 182 γ and 208 γ E3 (1969Ne04).
182.5		2510.2	$15/2^{+}$	2328.2	$13/2^{-}$	E1	0.0540	
208.0	52 3	2794.7	$23/2^{-}$	2586.7	$17/2^{+}$	E3	1.017	B(E3)(W.u.)=0.99 11 $\alpha(K)=0.478$ 7; $\alpha(L)=0.416$ 6; $\alpha(M)=0.0985$ 14; $\alpha(N+..)=0.0245$ 4 $\alpha(N)=0.0217$ 3; $\alpha(O)=0.00276$ 4; $\alpha(P)=2.48\times 10^{-5}$ 4 Mult.: K/L+M+N=0.91 (1969Ne04).
754.8		754.8	$11/2^-$	0.0	$3/2^+$	(M4)	0.1067	B(M4)(W.u.)=1.78 6 $\alpha(K)=0.0855$ 12; $\alpha(L)=0.01653$ 24; $\alpha(M)=0.00370$ 6;

Continued on next page (footnotes at end of table)

^{143}Sm IT decay (30 ms) [1969Ne04](#),[1974Ko29](#),[1983KoZU](#) (continued) $\gamma(^{143}\text{Sm})$ (continued)

<u>E_γ[‡]</u>	<u>I_γ^{#&}</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
						$\alpha(\text{N}+..)=0.000968$ 14 $\alpha(\text{N})=0.000839$ 12; $\alpha(\text{O})=0.0001225$ 18; $\alpha(\text{P})=6.66\times 10^{-6}$ 10 Mult.: from adopted γ' s.
1573.4	67 5	2328.2	13/2 ⁽⁻⁾	754.8	11/2 ⁻	
1575 [@]		2330		754.8	11/2 ⁻	
1705.5	21 3	2460.3	13/2 ⁽⁺⁾	754.8	11/2 ⁻	
^x 1720.5						
1755.0		2510.2	15/2 ⁽⁺⁾	754.8	11/2 ⁻	
1831.7	12 2	2586.7	17/2 ⁽⁺⁾	754.8	11/2 ⁻	

[†] [Additional information 1.](#)[‡] From [1974Ko29](#), except where noted otherwise.[#] From [1969Ne04](#), using $I_\gamma(1573\gamma+1705\gamma+1831\gamma)=100\%$.[@] Observed only in [1983KoZU](#).[&] For absolute intensity per 100 decays, multiply by 1.00 7.^x γ ray not placed in level scheme.

^{143}Sm IT decay (30 ms) 1969Ne04,1974Ko29,1983KoZU

Decay Scheme

Intensities: Relative I_γ
%IT=100.0

Legend

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

