

^{162}Tm IT decay (24.3 s) 1974De47

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 195,1 (2024)	19-Sep-2023

Parent: ^{162}Tm : E=x; $J^\pi=5^+$; $T_{1/2}=24.3$ s 17; %IT decay=82.5 34

^{162}Tm -E: x=129 62, see comment at level.

^{162}Tm -%IT decay: The 24-s ^{162}Tm level decays both by IT decay and by ε decay. The IT decay is assumed to proceed to the g.s. via a two-step cascade involving an unobserved E3 transition, followed by the 66.9 γ , which has an M1+<40% E2 character (1974De47). The total intensity of the ε decay is taken to be the sum $I(\gamma+ce)(227)+I(\gamma+ce)(798)+I(\gamma+ce)(899)+I(\gamma+ce)(900)$. In l γ units used here and in 1974De47, the IT decay intensity is 1287 193 units, and the ε decay intensity is 274 50. The branching is thus $1287/(1287+274)=0.825$ 34. (This differs from the value 0.898 22 given by 1974De47.).

Additional information 1.

Data are from 1974De47, unless otherwise noted. Source produced by (p,xn) reaction on natural Er with E(p)=52 MeV and γ spectra measured with Ge detectors.

 ^{162}Tm Levels

E(level)	J^π [†]	$T_{1/2}$	Comments
0.0 [‡]	1 ⁻	21.70 min 19	$T_{1/2}$: from ^{162}Tm Adopted Levels and based on values of 21.5 min 10 (1963Ab02), 22.5 min 10 (1969Pa16), 21.8 min 3 (1971Ch30), and 21.6 min 3 (1974DeZF).
66.90 [#] 10	2 ⁻		
x [@]	5 ⁺	24.3 s 17	E(level): x=129 62, deduced from the upper limit (125 keV) on the energy of the isomeric transition and the fact that it feeds the 2 ⁻ level at 66.9 keV. Numeric value is not adopted because its high uncertainty would make senseless the band levels built on this isomeric state (see Adopted Levels, Gammas dataset).

[†] From ^{162}Tm Adopted Levels.

[‡] Band(A): $K^\pi=1^-$ bandhead. Configuration=(ν 3/2[521])-(π 1/2[411]).

[#] Band(B): $K^\pi=2^-$ bandhead. Configuration=(π 7/2[404])-(ν 3/2[521]).

[@] Band(C): $K^\pi=5^+$ bandhead. Configuration=(π 7/2[523])+(ν 3/2[521]).

¹⁶²Tm IT decay (24.3 s) ¹⁹⁷⁴De47 (continued)

$\gamma(^{162}\text{Tm})$

I_γ normalization: Calculated to give 100% feeding on this IT decay branch of the ground state by the 66.9γ.

E_γ	I_γ^\ddagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	α^\dagger	$I_{(\gamma+ce)}^\ddagger$	Comments
66.90 10	110 10	66.90	2 ⁻	0.0	1 ⁻	M1(+E2)	0.41 41	10.7 14		%I _γ =7.1 10 α(K)=7.3 17; α(L)=2.6 23; α(M)=0.6 6 α(N)=0.14 13; α(O)=0.018 14; α(P)=0.00045 10 I _γ ,Mult.,δ: from ¹⁹⁷⁴ De47.
(<125)		x	5 ⁺	66.90	2 ⁻	[E3]			1.29×10 ³ 20	E _γ : this transition is not directly observed. This upper limit on its energy is inferred (¹⁹⁷⁴ De47) from the absence of K x rays in coincidence with 66.9-keV gammas and the smallness of α(K) relative to α for E3 transitions in Tm.

† Additional information 2.

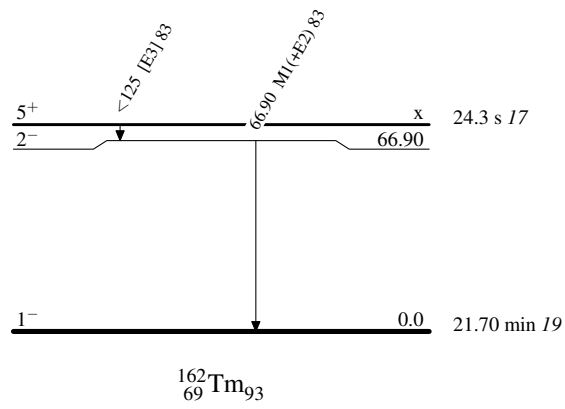
‡ For absolute intensity per 100 decays, multiply by 0.064 10.

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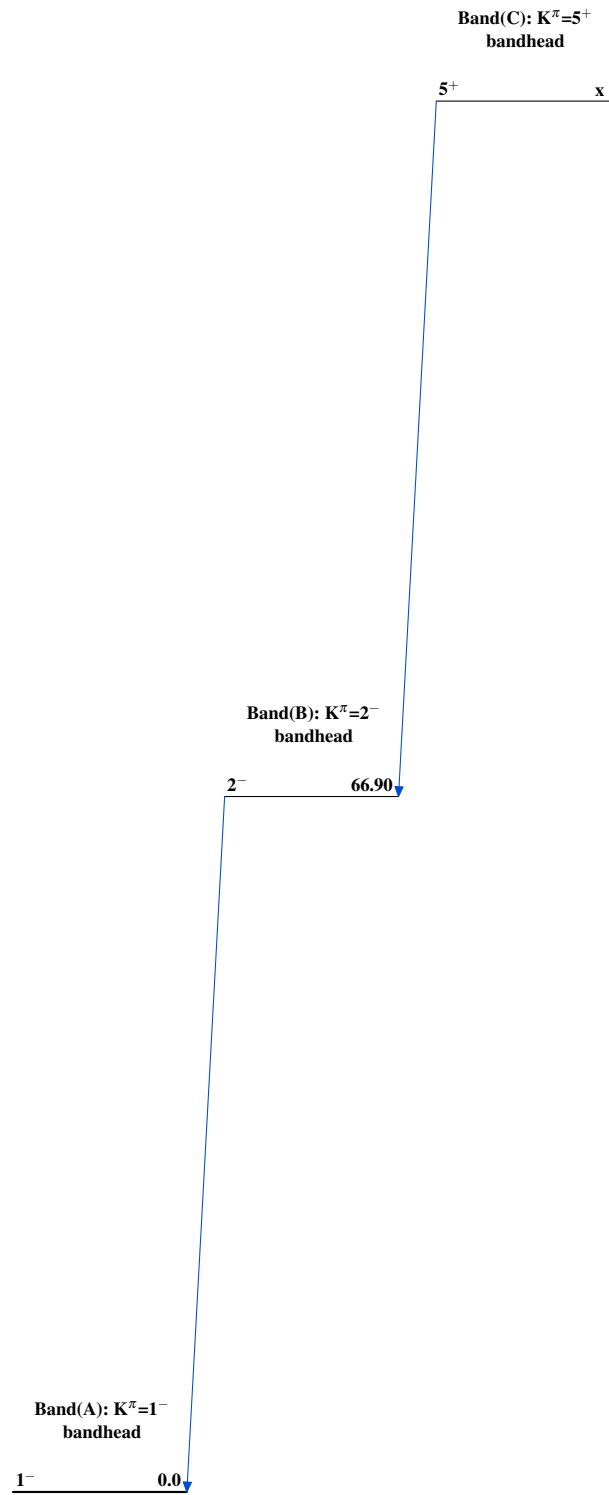
Decay Scheme

Intensities: $I(\gamma+ce)$ per 100 parent decays
%IT=82.5 34

Legend

-----► γ Decay (Uncertain)

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$^{162}_{69}\text{Tm}_{93}$