^{171}Tm β^- decay 1964Ha52,2018We04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan	NDS 151, 334 (2018)	30-Jun-2018

Parent: ^{171}Tm: E=0.0; $J^\pi=1/2^+$; $T_{1/2}$=1.92 y *1*; Q(β^-)=96.5 *10*; %β^- decay=100.0

1964Ha52: Measured Eβ, Iβ, E(ce), Ice (mag spect), β^-ce coin.

2018We04: ^{171}Tm activity from the decay of ^{171}Er which was produced through thermal neutron irradiation of ^{170}Er. Measured Eγ, Iγ using an HPGe detector. Deduced absolute intensity of the 66.7-keV transition based on absolute intensities of the 295.9- and 308.3-keV transitions in the decay of ^{171}Er.

Others: 1955Bi65, 1957Sm73, 1961Sh06, 1966Di02, 1970Mo07, 1975Mc12.

See 1988Ta03, 1975Mc12, 1970Mo07 for use of ^{171}Tm source to measure L subshell fluorescence yields, Coster-Kronig transition probabilities, and/or radiative decay branching ratios for Z=70.

α: Additional information 1.

^{171}Yb Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	$1/2^-$	stable	
66.731 *2*	$3/2^-$	<0.5 μs	$T_{1/2}$: from β^-X(t), $\beta\gamma$(t) (1957Sm73); adopted value is 0.79 ns *5*.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(29.8 *10*)	66.731	1.96 *14*	6.46 *6*	av Eβ=7.52 *26* E(decay): other: ≈30 from 1957Sm73 (mag spect). Iβ^-: from I(γ+ce) for 66.7γ.
(96.5 *10*)	0.0	98.04 *14*	6.318 *14*	av Eβ=25.15 *28* E(decay): others: 96.5 *10* from 1957Sm73 (mag spect), 98 keV *1* (1964Ha52). Iβ^-: from decay scheme.

† Absolute intensity per 100 decays.

$\gamma(^{171}Yb)$

Iγ normalization: from 2018We04 where the absolute intensity is determined by deducing the number of ^{171}Er atoms in the sample based on the absolute intensities of the 295.9γ (Iγ=28.9 % *12*) and 308.3γ (Iγ=64 *5 3*) from the decay of ^{171}Er.

E$_\gamma$†	I$_\gamma$‡	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.†	δ†	α	Comments
66.731 *2*	0.144 *10*	66.731	$3/2^-$	0.0	$1/2^-$	M1+E2	+0.693 *7*	12.63	α(K)=6.62 *10*; α(L)=4.61 *8*; α(M)=1.116 *19*; α(N)=0.256 *5*; α(O)=0.0304 *5*; α(P)=0.000411 *6* Iγ(Yb K x ray)/Iγ(66.7γ)=6.98 *34* (1970Mo07) and 6.5 *9* (1966Di02), α(K)exp=7.3 *4* and 6.8 *9*, respectively, assuming K-fluorescence yield=0.951.

† From Adopted Gammas.

‡ Absolute intensity per 100 decays.

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Decay Scheme

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