^{170}Tb β^- decay 2016So13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

Parent: ^{170}Tb: E=0.0; $T_{1/2}$=0.96 s *8*; Q(β^-)=6.94×10^3 *SY*; %β^- decay=100.0

2016So13: ^{170}Tb activity produced using the ^{9}Be(^{238}U,F) reaction (E=345 MeV/nucleon) and separated and identified in the BigRIPS separator and the ZeroDegree spectrometer based on their atomic number (Z) and mass-to-charge ratio (A/Q). Measured Eγ, Iγ, $\beta\gamma$ using the WAS3ABi active stopper consisting of two 40 × 60 mm^2 double-sided silicon-strip detectors, surrounded by the EURICA array of 84 HPGe detectors.

α: Additional information 1.

^{170}Dy Levels

E(level)[†]	J$^\pi$[‡]	Comments
0.0	0$^+$	
71.47 *15*	(2$^+$)	
237.33 *18*	(4$^+$)	
861.35 *21*	(2$^-$)	
925.2 *3*	(3$^-$)	
991.8 *4*	(2$^+$)	
2030.4 *4*	(2$^-$)	configuration: Probable π^2(3/2$^+$[411],7/2$^-$[523]). Assignment is tentative.

[†] From least-squares fit to Eγ, by evaluators.
[‡] From the Adopted Levels.

γ(^{170}Dy)

Iγ normalization: 2013So13 report absolute Iγ values based on event-by-event identification of the ^{170}Tb activity. However, since the decay scheme is incomplete and there is an intensity imbalance at the J^π=2$^+$, 71.5-keV level (albeit with large ΔIγ) , no determination of β-feedings or log *ft* values are made here.

E$_\gamma$[†]	I$_\gamma$[†#]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	α	Comments
71.45 *15*	9.2 *27*	71.47	(2$^+$)	0.0	0$^+$	[E2]	9.89 *17*	α(K)=2.24 *4*; α(L)=5.88 *11*; α(M)=1.414 *25*; α(N)=0.316 *6*; α(O)=0.0375 *7*; α(P)=9.95×10^{-5} *15*
165.84 *11*	15.1 *33*	237.33	(4$^+$)	71.47	(2$^+$)	[E2]	0.445	α(K)=0.276 *4*; α(L)=0.1305 *19*; α(M)=0.0308 *5*; α(N)=0.00695 *10*; α(O)=0.000864 *13* α(P)=1.260×10^{-5} *18*
687.72 *33*	10.4 *35*	925.2	(3$^-$)	237.33	(4$^+$)	[E1]	0.00260	α(K)=0.00221 *4*; α(L)=0.000299 *5*; α(M)=6.50×10^{-5} *10*; α(N)=1.498×10^{-5} *21*; α(O)=2.18×10^{-6} *3* α(P)=1.224×10^{-7} *18*
789.93 *15*	74 *9*	861.35	(2$^-$)	71.47	(2$^+$)	[E1]	0.00196	α(K)=0.001676 *24*; α(L)=0.000225 *4*; α(M)=4.88×10^{-5} *7*; α(N)=1.126×10^{-5} *16* α(O)=1.639×10^{-6} *23*; α(P)=9.30×10^{-8} *13*
853.7 *5*	5.9 *29*	925.2	(3$^-$)	71.47	(2$^+$)	[E1]	1.69×10^{-3}	α(K)=0.001440 *21*; α(L)=0.000192 *3*; α(M)=4.18×10^{-5} *6*; α(N)=9.64×10^{-6} *14* α(O)=1.405×10^{-6} *20*; α(P)=8.01×10^{-8} *12*

Continued on next page (footnotes at end of table)

^{170}Tb β^- decay 2016So13 (continued)

$\gamma(^{170}Dy)$ (continued)

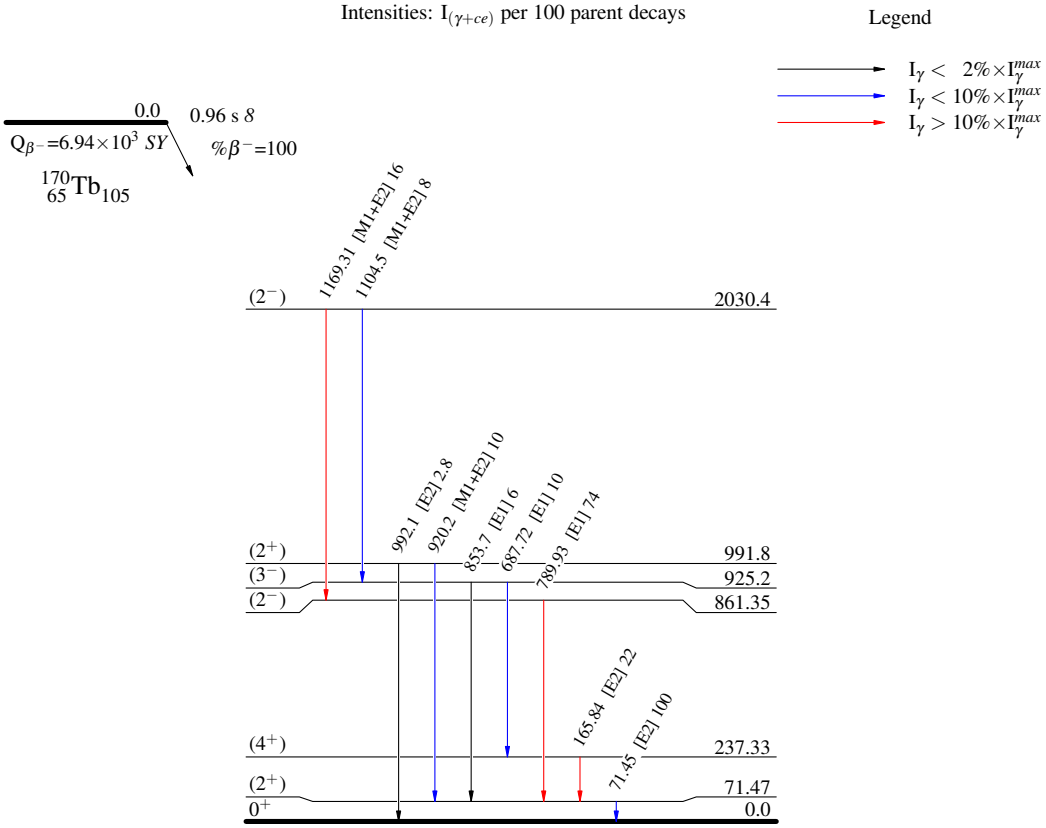
E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α	Comments
920.2 *4*	9.7 *35*	991.8	(2^+)	71.47	(2^+)	[M1+E2]	0.00649 *10*	α(K)=0.00552 *8*; α(L)=0.000765 *11*; α(M)=0.0001670 *24*; α(N)=3.86×10^{-5} *6*; α(O)=5.69×10^{-6} *8* α(P)=3.33×10^{-7} *5*
992.1 *7*	2.8 *21*	991.8	(2^+)	0.0	0^+	[E2]	0.00309	α(K)=0.00260 *4*; α(L)=0.000387 *6*; α(M)=8.52×10^{-5} *12*; α(N)=1.96×10^{-5} *3*; α(O)=2.83×10^{-6} *4* α(P)=1.499×10^{-7} *22*
1104.5 *6*	8 *4*	2030.4	(2^-)	925.2	(3^-)	[M1+E2]	0.00418	α(K)=0.00356 *5*; α(L)=0.000490 *7*; α(M)=0.0001069 *15*; α(N)=2.47×10^{-5} *4*; α(O)=3.64×10^{-6} *6* α(P)=2.14×10^{-7} *3*
1169.31 *35*	16 *5*	2030.4	(2^-)	861.35	(2^-)	[M1+E2]	0.00365	α(K)=0.00310 *5*; α(L)=0.000427 *6*; α(M)=9.31×10^{-5} *13*; α(N)=2.15×10^{-5} *3*; α(O)=3.17×10^{-6} *5* α(P)=1.87×10^{-7} *3*

† From 2016So13.
‡ Assumed values based on the Adopted J^π values.
# Absolute intensity per 100 decays.

^{170}Tb β^- decay 2016So13

Decay Scheme

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



$^{170}_{66}Dy_{104}$