^{170}Dy IT 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}Dy: E=1643.8 *3*; $J^\pi=(6^+)$; $T_{1/2}$=990 ns *40*; %IT decay=100.0

2016So13: ^{170}Dy 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 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)†	Jπ‡	$T_{1/2}$	Comments
0.0@	0^+		
71.47@ *15*	(2^+)		
237.31@ *18*	(4^+)		
494.7@ *5*	(6^+)		
861.40#a *21*	(2^-)		
1116.5#a *4*	(5^-)		
1147.12#& *23*	(4^+)		
1257.4& *3*	(5^+)		
1389.1& *6*	(6^+)		
1643.8b *3*	(6^+)	990 ns *40*	configuration: $K^\pi=(6^+)$ 2-qp ν^2(5/2[512],7/2[514]) state (2016So13). $T_{1/2}$: From implant-γ(t) in 2016So13.

† From least-squares fit to Eγ, by evaluators.
‡ From the Adopted Levels.
# Apparent intensity imbalance at this level, indicating incomplete decay level scheme.
@ Band(A): $K^\pi=0^+$, g.s. band.
& Band(B): $K^\pi=(2^+)$, γ vibrational band.
a Band(C): $K^\pi=(2^-)$, octupole vibrational band.
b Band(D): $K^\pi=(6^+)$, 2-qp state. Proposed configuration=ν^2(5/2[512],7/2[514]) (2016So13).

γ(^{170}Dy)

Iγ normalization: Iγ are reported by 2016So13 as per 100 implanted isomeric nuclei.

Eγ†	Iγ†‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α	Comments
71.45 *15*	9.2 *24*	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*	58 *5*	237.31	(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*
255 *1*	<3.2	1643.8	(6^+)	1389.1	(6^+)	[M1+E2]	0.14 *4*	α(K)=0.112 *36*; α(L)=0.0222 *10*; α(M)=0.0050 *4*; α(N)=0.00115 *7*; α(O)=0.000158 *4* α(P)=6.5×10^{-6} *27*
256.9 *29*	9.0 *28*	494.7	(6^+)	237.31	(4^+)	[E2]	0.105 *5*	α(K)=0.076 *3*; α(L)=0.0224 *11*; α(M)=0.00518

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^{170}Dy IT decay 2016So13 (continued)

γ(^{170}Dy) (continued)

E_γ [†]	I_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α	Comments
								25; α(N)=0.00117 *6*; α(O)=0.000152 *7* α(P)=3.82×10^{-6} *14*
386.33 *15*	30 *4*	1643.8	(6$^+$)	1257.4	(5$^+$)	[M1+E2]	0.044 *14*	α(K)=0.036 *13*; α(L)=0.0061 *9*; α(M)=0.00136 *18*; α(N)=0.00031 *5*; α(O)=4.4×10^{-5} *8* α(P)=2.15×10^{-6} *86*
496.64 *14*	44 *5*	1643.8	(6$^+$)	1147.12	(4$^+$)	[E2]	0.01542	α(K)=0.01241 *18*; α(L)=0.00235 *4*; α(M)=0.000528 *8*; α(N)=0.0001209 *17* α(O)=1.667×10^{-5} *24*; α(P)=6.94×10^{-7} *10*
527.28 *22*	13.7 *30*	1643.8	(6$^+$)	1116.5	(5$^-$)	[E1]	0.00457	α(K)=0.00389 *6*; α(L)=0.000532 *8*; α(M)=0.0001159 *17*; α(N)=2.67×10^{-5} *4*; α(O)=3.86×10^{-6} *6* α(P)=2.13×10^{-7} *3*
621.8 *4*	4.4 *19*	1116.5	(5$^-$)	494.7	(6$^+$)	[E1]	0.00320	α(K)=0.00273 *4*; α(L)=0.000370 *6*; α(M)=8.06×10^{-5} *12*; α(N)=1.86×10^{-5} *3*; α(O)=2.69×10^{-6} *4* α(P)=1.503×10^{-7} *22*
764 *4*	5.3 *21*	1257.4	(5$^+$)	494.7	(6$^+$)	[M1+E2]	0.0078 *24*	α(K)=0.0066 *21*; α(L)=9.7×10^{-4} *25*; α(M)=0.00021 *6*; α(N)=4.9×10^{-5} *13*; α(O)=7.1×10^{-6} *19* α(P)=3.9×10^{-7} *14*
789.93 *15*	6.1 *21*	861.40	(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*
894.5 *5*	3.3 *17*	1389.1	(6$^+$)	494.7	(6$^+$)	[M1+E2]	0.0054 *16*	α(K)=0.0046 *14*; α(L)=6.6×10^{-4} *17*; α(M)=0.00014 *4*; α(N)=3.3×10^{-5} *9*; α(O)=4.8×10^{-6} *13* α(P)=2.71×10^{-7} *86*
909.79 *18*	29 *5*	1147.12	(4$^+$)	237.31	(4$^+$)	[M1+E2]	0.0052 *15*	α(K)=0.0044 *13*; α(L)=6.3×10^{-4} *16*; α(M)=0.00014 *4*; α(N)=3.2×10^{-5} *8*; α(O)=4.6×10^{-6} *12* α(P)=2.61×10^{-7} *82*
1020.5 *10*	33.2 *19*	1257.4	(5$^+$)	237.31	(4$^+$)	[M1+E2]	0.0040 *11*	α(K)=0.00338 *93*; α(L)=0.00048 *12*; α(M)=0.000105 *25*; α(N)=2.4×10^{-5} *6*; α(O)=3.5×10^{-6} *9* α(P)=2.00×10^{-7} *59*
1075.68 *30*	2.9 *15*	1147.12	(4$^+$)	71.47	(2$^+$)	[E2]	0.00262	α(K)=0.00221 *3*; α(L)=0.000323 *5*; α(M)=7.10×10^{-5} *10*; α(N)=1.636×10^{-5} *23*; α(O)=2.36×10^{-6} *4* α(P)=1.274×10^{-7} *18*
1148.9 *7*	2.0 *15*	1643.8	(6$^+$)	494.7	(6$^+$)	[M1+E2]	0.0031 *8*	α(K)=0.00259 *66*; α(L)=0.00036 *9*; α(M)=7.9×10^{-5} *18*; α(N)=1.8×10^{-5} *5*; α(O)=2.7×10^{-6} *7* α(P)=1.53×10^{-7} *42*
1406 *1*	<2.1	1643.8	(6$^+$)	237.31	(4$^+$)	[E2]	1.59×10^{-3}	α(K)=0.001307 *19*; α(L)=0.000183 *3*;

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^{170}Dy IT decay 2016So13 (continued)

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

E_γ[†]	E_i(level)	Comments
		α(M)=4.01×10^{-5} *6*; α(N)=9.25×10^{-6} *13* α(O)=1.347×10^{-6} *19*; α(P)=7.56×10^{-8} *11*

† From 2016So13.
‡ Absolute intensity per 100 decays.

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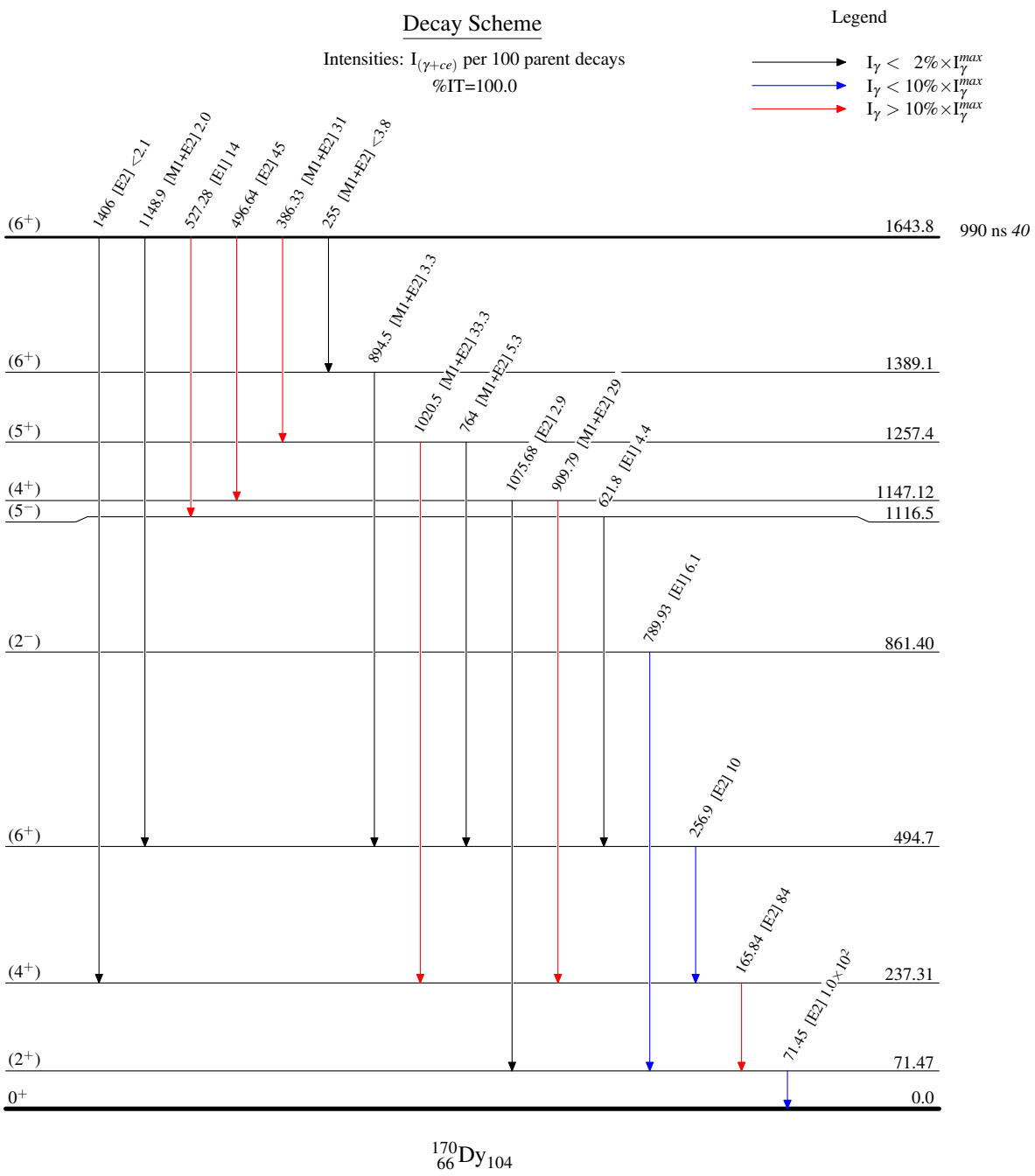

$^{170}_{66}Dy_{104}$

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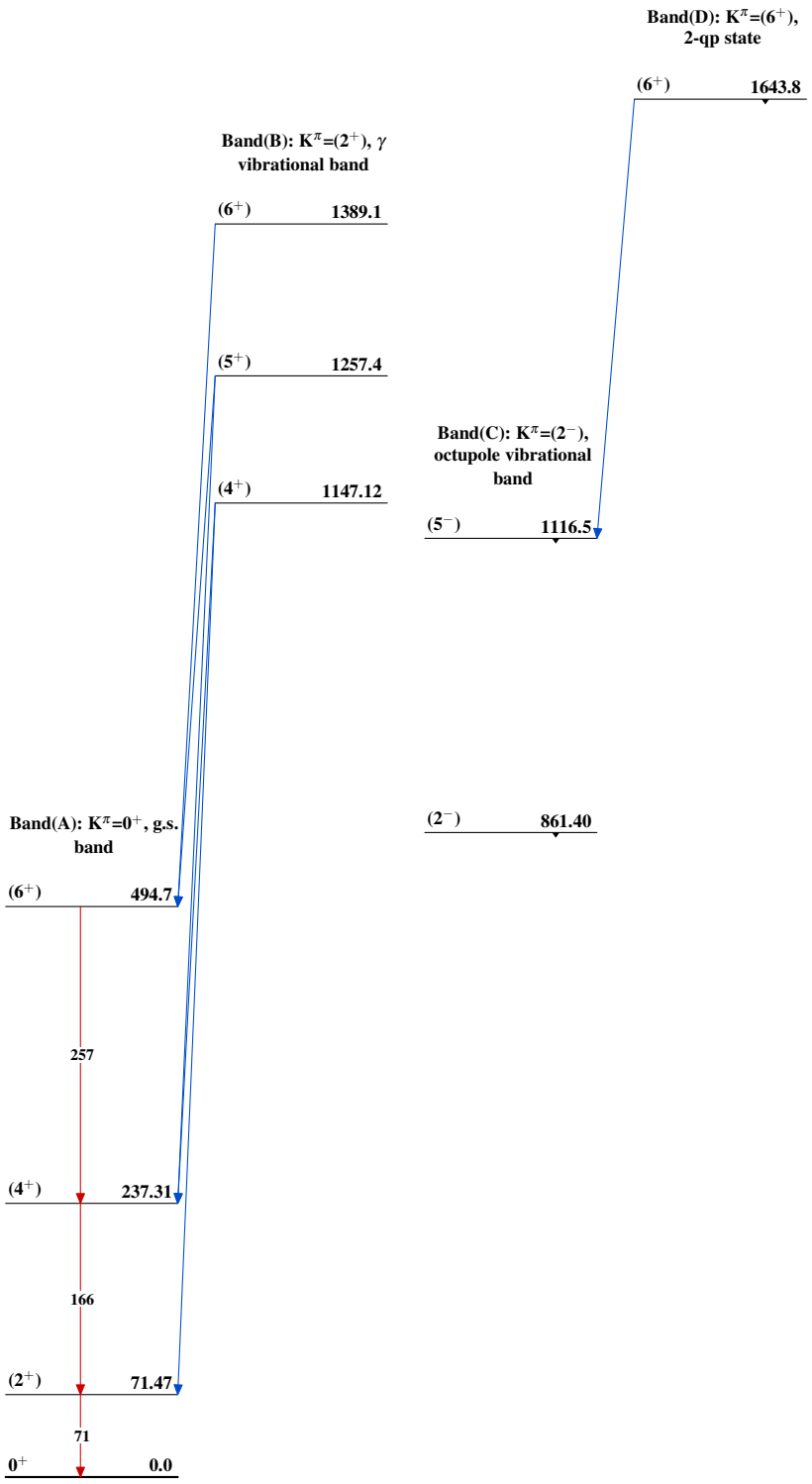

$^{170}_{66}Dy_{104}$