^{150}Ho ε decay (23.5 s) 1990Sa32

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni	NDS 114, 435 (2013)	1-Apr-2013

Parent: ^{150}Ho: E=x; $J^{\pi}=(9)^{+}$; $T_{1/2}$=23.5 s *3*; Q(ε)=7364 *14*; %ε+%β^{+} decay=100.0

1990Sa32: source from ^{116}Cd(^{40}Ar,X), E=250 MeV. Measured γ, $\gamma\beta$.

1979To09: production by irradiating thin targets of ^{144}Sm with beams of ^{10} B at energies ranging from 60 to 75 MeV. Measured γ, $\gamma\gamma$, γ(t). The $\beta^{+}+\varepsilon$ decay of ^{150}Ho, primarily to an 8^{+} state at 2400 keV deexciting to the ground state through a cascade of four coincident γ rays, was first reported by 1973BoVZ and later seen by others. 1979To09 confirm the assignment of these γ rays to ^{150}Dy by means of γ-ray and K x-ray coincidences.

Other: 1982Mo19, 1980Li18, 1976Ba18.

^{150}Dy Levels

E(level)	J^{π}	$T_{1/2}$	E(level)	J^{π}	E(level)	J^{π}
0	0^{+}	7.17 min *5*	2582.9 *6*	(6,7,8)	3243.4 *6*	(8,9,10)
803.30 *20*	2^{+}		2686.5 *7*	(8)	3813.9 *8*	(8,9,10)
1456.6 *4*	4^{+}		2714.6 *6*	(8)	4013.7 *8*	(8,9,10)
1850.4 *5*	6^{+}		2812.4 *6*	9^{-}	4148.7 *8*	(8,9,10)
2401.2 *6*	8^{+}		3025.2 *6*	10^{+}	4294.0 *7*	(8,9,10)

ε,β^{+} radiations

E(decay)	E(level)	$I\beta^{+}$ †	$I\varepsilon$†	Log *ft*	$I(\varepsilon+\beta^{+})$†	Comments
(3069 *14*)	4294.0	0.93 *5*	2.7 *1*	4.92 *3*	3.6 *2*	av Eβ=924.8 *64*; εK=0.621 *4*; εL=0.0935 *6*; εM+=0.02749 *16*
(3214 *14*)	4148.7	0.3 *1*	0.6 *1*	5.59 *5*	0.9 *1*	av Eβ=990.4 *64*; εK=0.586 *4*; εL=0.0880 *6*; εM+=0.02587 *16*
(3349 *14*)	4013.7	0.41 *3*	0.79 *7*	5.53 *4*	1.2 *1*	av Eβ=1051.5 *64*; εK=0.552 *4*; εL=0.0829 *6*; εM+=0.02437 *16*
(3549 *14*)	3813.9	1.1 *1*	1.6 *1*	5.27 *4*	2.7 *2*	av Eβ=1142.2 *64*; εK=0.503 *4*; εL=0.0755 *6*; εM+=0.02218 *16*
(4120 *14*)	3243.4	0.72 *6*	0.58 *5*	5.84 *4*	1.3 *1*	av Eβ=1403.3 *65*; εK=0.377 *3*; εL=0.0563 *5*; εM+=0.01654 *13*
(4338 *14*)	3025.2	2.0 *1*	1.3 *1*	5.53 *3*	3.3 *2*	av Eβ=1503.9 *65*; εK=0.336 *3*; εL=0.0501 *4*; εM+=0.01471 *12*
(4551 *14*)	2812.4	3.3 *5*	1.8 *3*	5.44 *6*	5.1 *7*	av Eβ=1602.3 *65*; εK=0.2996 *23*; εL=0.0447 *4*; εM+=0.01311 *10*
(4648 *14*)	2714.6	1.5 *1*	0.75 *3*	5.844 *22*	2.2 *1*	av Eβ=1647.7 *65*; εK=0.2843 *22*; εL=0.0424 *4*; εM+=0.01244 *10*
(4677 *14*)	2686.5	1.1 *2*	0.53 *10*	5.99 *9*	1.6 *3*	av Eβ=1660.7 *65*; εK=0.2801 *21*; εL=0.0417 *4*; εM+=0.01225 *10*
(4962 *14*)	2401.2	52.6 *3*	21.2 *2*	4.448 *9*	73.8 *3*	av Eβ=1793.4 *66*; εK=0.2407 *18*; εL=0.0358 *3*; εM+=0.01051 *8*

† Absolute intensity per 100 decays.

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$\gamma(^{150}Dy)$

I(γ+ce) normalization: From the requirement that Σ I(γ+ce)(g.s.) (=Iγ(803γ))=100.

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[#]	Comments
393.8 *4*	93.6 *52*	1850.4	6+	1456.6	4+	E2	0.0290	α(K)=0.0227 *4*; α(L)=0.00488 *7*; α(M)=0.001110 *16*; α(N)=0.000253 *4*; α(O)=3.42×10^{-5} *5* α(P)=1.236×10^{-6} *18*; α(N+..)=0.000288 *5*
411.2 *3*	5.1 *7*	2812.4	9−	2401.2	8+			
550.8 *2*	89.6 *23*	2401.2	8+	1850.4	6+	E2	0.01183	α(K)=0.00961 *14*; α(L)=0.001731 *25*; α(M)=0.000388 *6*; α(N)=8.89×10^{-5} *13* α(O)=1.236×10^{-5} *18*; α(P)=5.42×10^{-7} *8*; α(N+..)=0.0001018 *15*
624.0 *2*	3.3 *2*	3025.2	10+	2401.2	8+			
653.3 *3*	95.9 *59*	1456.6	4+	803.30	2+	E2	0.00780 *11*	α(K)=0.00642 *9*; α(L)=0.001079 *16*; α(M)=0.000240 *4*; α(N)=5.52×10^{-5} *8*; α(O)=7.77×10^{-6} *11* α(P)=3.66×10^{-7} *6*; α(N+..)=6.33×10^{-5} *9*
732.5 *4*	1.8 *4*	2582.9	(6,7,8)	1850.4	6+			
803.3 *2*	100	803.30	2+	0	0+	E2	0.00486 *7*	α(K)=0.00405 *6*; α(L)=0.000636 *9*; α(M)=0.0001408 *20*; α(N)=3.24×10^{-5} *5*; α(O)=4.61×10^{-6} *7* α(P)=2.33×10^{-7} *4*; α(N+..)=3.72×10^{-5} *6*
836.1 *5*	1.6 *3*	2686.5	(8)	1850.4	6+			
842.2 *2*	1.3 *1*	3243.4	(8,9,10)	2401.2	8+			
864.2 *2*	2.2 *1*	2714.6	(8)	1850.4	6+			
1412.7 *5*	2.7 *2*	3813.9	(8,9,10)	2401.2	8+			
1612.5 *5*	1.2 *1*	4013.7	(8,9,10)	2401.2	8+			
1711.1 *5*	1.6 *1*	4294.0	(8,9,10)	2582.9	(6,7,8)			
1747.5 *5*	0.9 *1*	4148.7	(8,9,10)	2401.2	8+			
1892.7 *5*	2.0 *1*	4294.0	(8,9,10)	2401.2	8+			

† From adopted gammas.

‡ For absolute intensity per 100 decays, multiply by 0.9951 *2*.

Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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