

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018

Q(β^-)=-13570 SY; S(n)=13260 SY; S(p)=1990 SY; Q(α)=3840 SY 2017Wa10

Uncertainties based on syst are: $\Delta Q(\beta^-)$ =640, $\Delta S(n)$ =640, $\Delta S(p)$ =500, $\Delta Q(\alpha)$ =500.

Q(ϵp)=7510 450 (2017Wa10. Systematics).

Extensive theoretical studies of g.s. and isomeric proton decay of the ¹⁴¹Ho parent: 2000Ka47, 2000Da11, 2002Fe03, 2002Da29, 2002Ma75, 2002Ma62, 2003Fi05, 2004Da10, 2004Ma67, 2004Kr09, 2005DaZZ, 2004Ge16, 2005Fe08, 2005Fe08, 2005Vo20,

¹⁴⁰Dy Levels

Cross Reference (XREF) Flags

- A ¹⁴⁰Dy IT decay (7.0 μ s)
- B ¹⁴¹Ho p decay (4.1 ms)
- C ¹⁴¹Ho p decay (7.4 μ s)

E(level) [†]	J π [‡]	T _{1/2}	XREF	Comments
0 [#]	0 ⁺		ABC	$\% \epsilon + \% \beta^+ = ?$ $\beta_2 = 0.24$ 3 (2002Cu01) β_2 : other values: ≈ 0.24 (2005Bi24) 0.244 (2003Fi05, 2002Kr04), 0.23-0.24 (2003BaZZ, 2002RyZX). Also, from the analysis of the proton radioactivity data, $\beta \approx 0.3$ was deduced (1998Da03, 1999Ry04, 1999Ma05, 2000Bb02, 2000Kr07, 2001Es01). A similar conclusion was reached following the study of the high-spin data (2001Se03).
202.20 [#] 20	(2 ⁺)		ABC	
566.2 [#] 3	(4 ⁺)		A	
1042.3 [#] 4	(6 ⁺)		A	
1592.3? [#] 4	(8 ⁺)		A	E(level): according to ¹⁴⁰ Dy IT Decay dataset, the ordering of the 574-550 cascade is not well established. Alternate ordering gives E(level)=1616.1.
2166.1 5	(8 ⁻)	7.0 μ s 5	A	$\%IT=100$ T _{1/2} : weighted average of 7.0 μ s 5 (2002Kr04) and 7.3 μ s 15 (2002Cu01).

[†] From E γ .

[‡] From cascade pattern and systematics of N=74 nuclides.

[#] Band(A): g.s. rotational band.

$\gamma(^{140}\text{Dy})$

All data from ¹⁴⁰Dy IT Decay dataset.

E _i (level)	J _i π	E γ	I γ	E _f	J _f π	Mult. [†]	α [‡]	Comments
202.20	(2 ⁺)	202.2 2	100	0	0 ⁺	(E2)	0.228	$\alpha(K)=0.1536$ 22; $\alpha(L)=0.0574$ 9; $\alpha(M)=0.01344$ 20; $\alpha(N+..)=0.00343$ 5
566.2	(4 ⁺)	364.0 2	100	202.20	(2 ⁺)	(E2)	0.0363	$\alpha(N)=0.00304$ 5; $\alpha(O)=0.000385$ 6; $\alpha(P)=7.35 \times 10^{-6}$ 11 $\alpha(K)=0.0281$ 4; $\alpha(L)=0.00635$ 9; $\alpha(M)=0.001450$ 21; $\alpha(N+..)=0.000376$ 6 $\alpha(N)=0.000330$ 5; $\alpha(O)=4.43 \times 10^{-5}$ 7; $\alpha(P)=1.513 \times 10^{-6}$ 22

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{140}\text{Dy})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [†]	α^\ddagger	Comments
1042.3	(6 ⁺)	476.1 2	100	566.2	(4 ⁺)	(E2)	0.01723	$\alpha(\text{K})=0.01381\ 20$; $\alpha(\text{L})=0.00267\ 4$; $\alpha(\text{M})=0.000602\ 9$; $\alpha(\text{N+..})=0.0001573\ 23$
1592.3?	(8 ⁺)	550.0 [#] 2	100	1042.3	(6 ⁺)	(E2)	0.01187	$\alpha(\text{K})=0.00964\ 14$; $\alpha(\text{L})=0.001738\ 25$; $\alpha(\text{M})=0.000390\ 6$; $\alpha(\text{N+..})=0.0001023\ 15$
2166.1	(8 ⁻)	573.8 [#] 2	100	1592.3?	(8 ⁺)	(E1)	0.00380	$\alpha(\text{N})=8.93\times 10^{-5}\ 13$; $\alpha(\text{O})=1.242\times 10^{-5}\ 18$; $\alpha(\text{P})=5.44\times 10^{-7}\ 8$
								$\alpha(\text{K})=0.00324\ 5$; $\alpha(\text{L})=0.000441\ 7$; $\alpha(\text{M})=9.60\times 10^{-5}\ 14$; $\alpha(\text{N+..})=2.55\times 10^{-5}\ 4$
								$\alpha(\text{N})=2.21\times 10^{-5}\ 3$; $\alpha(\text{O})=3.20\times 10^{-6}\ 5$; $\alpha(\text{P})=1.776\times 10^{-7}\ 25$
								$\text{B}(\text{E1})(\text{W.u.})=1.89\times 10^{-10}\ 14$

[†] From systematics of N=74 nuclides.

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

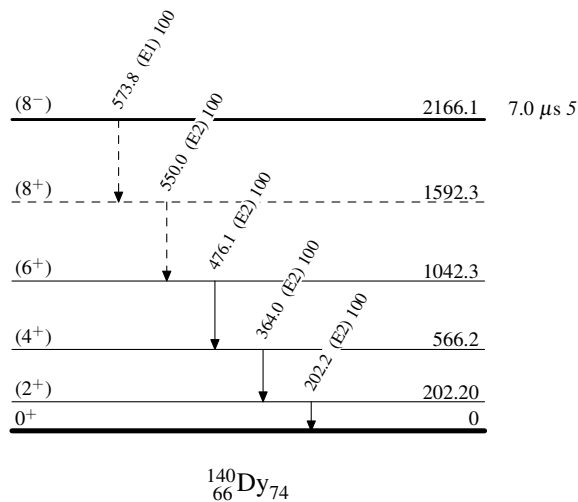
[#] Placement of transition in the level scheme is uncertain.

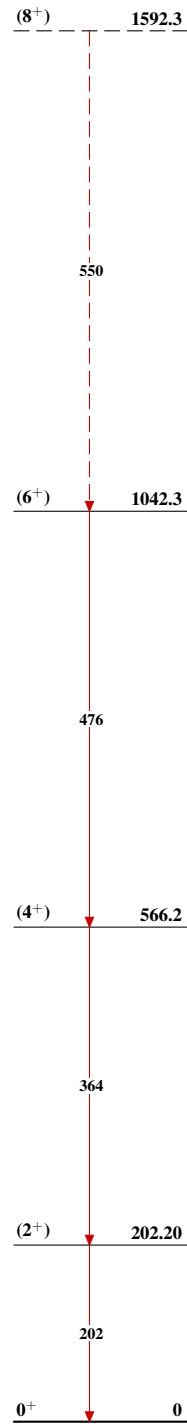
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

Adopted Levels, Gammas**Band(A): g.s. rotational
band** $^{140}_{66}\text{Dy}_{74}$