

^{140}Dy IT decay (7.0 μs) 2002Kr04,2002Cu01

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

Parent: ^{140}Dy : E=2166.1 5; $J^\pi=(8^-)$; $T_{1/2}=7.0 \mu\text{s}$ 5; %IT decay=100.0

2002Kr04,2003Kr22: $^{92}\text{Mo}(^{54}\text{Fe},\alpha 2n\gamma)$ E=315 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma(t)$ following A=140 selection using ORNL's Recoil Mass Spectrometer; γ information obtained using 4 Clover Ge detectors (4 detectors in each Clover) plus one Ge for γX -coin, all of them operated without escape suppression. Production $\sigma=20 \mu\text{b}$.

2002Cu01: $^{92}\text{Mo}(^{54}\text{Fe},\alpha 2n\gamma)$ E=245 MeV. Measured $E\gamma$, $\gamma\gamma$, $\gamma(t)$ using 7 Ge detectors following A=140 selection in Argonne's Fragment Mass Analyzer.

The data are from 2002Kr04, unless noted otherwise.

 ^{140}Dy Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0 [#]	0 ⁺		$\beta_2=0.24$ 3 (2002Cu01) Other β_2 values: ≈ 0.24 (2005Bi24) 0.244 (2003Fi05,2002Kr04), 0.23-0.24 (2003BaZZ,2002RyZX).
202.20 [#] 20	(2 ⁺)		
566.2 [#] 3	(4 ⁺)		
1042.3 [#] 4	(6 ⁺)		
1592.3? [#] 4	(8 ⁺)		E(level): ordering of the 574-550 cascade is not well established. Alternate ordering gives E(level)=1616.1.
2166.1 5	(8 ⁻)	7.0 μs 5	$T_{1/2}$: weighted average of 7.0 μs 5 (2002Kr04) and 7.3 μs 15 (2002Cu01). Two-quasineutron configuration $\nu 9/2^- [514]\nu 7/2^+ [404]$, $K^\pi=8^-$, from 1999Xu01, 2002KrZU, 2003Kr22.

[†] From $E\gamma$.

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

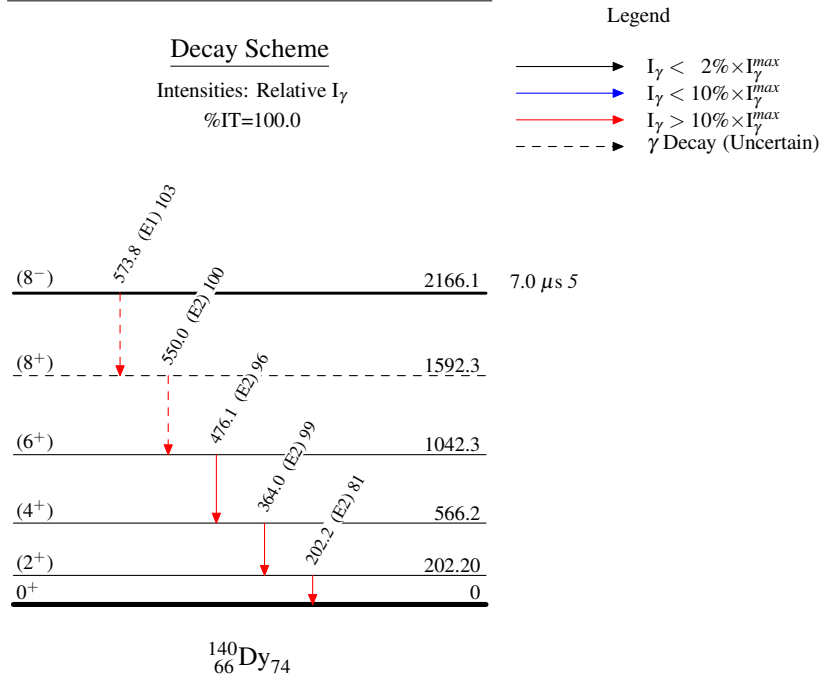
[#] Band(A): g.s. rotational band.

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

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]
202.2 2	81 3	202.20	(2 ⁺)	0	0 ⁺	(E2)
364.0 2	99 4	566.2	(4 ⁺)	202.20	(2 ⁺)	(E2)
476.1 2	96 4	1042.3	(6 ⁺)	566.2	(4 ⁺)	(E2)
550.0 [‡] 2	100 4	1592.3?	(8 ⁺)	1042.3	(6 ⁺)	(E2)
573.8 [‡] 2	103 5	2166.1	(8 ⁻)	1592.3?	(8 ⁺)	(E1)

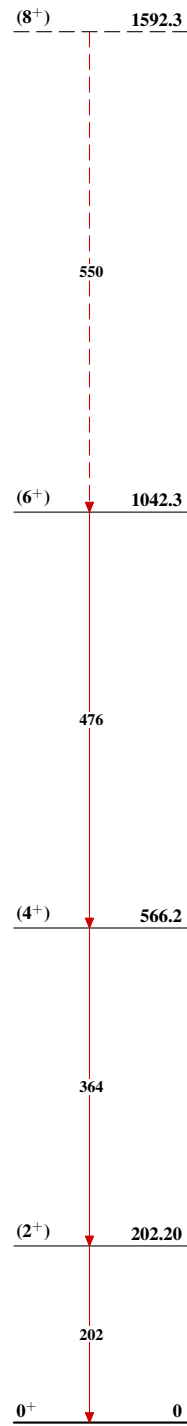
[†] From systematics of N=74 nuclides.

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

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Band(A): g.s. rotational band

 $^{140}_{66}\text{Dy}_{74}$