^{162}Dy(γ,γ′) 1995Ma69,1988We10

Type	Author	History Citation	Literature Cutoff Date
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Additional information 1.

Studies of the ^{162}Dy(γ,γ′) reaction have been reported in a number of references, including 1986KnZY, 1988We10, 1990Zi05, 1991Zi01, 1992Fr02, 1993Fr06, 1993Kn01, 1994Fr03, 1994KnZZ, 1994PiZZ, 1994Vo19, and 1995Ma69, all from the same group.

The data summarized here are mostly from 1995Ma69, with additional information from 1988We10. The measurements used enriched (95.1% ^{162}Dy) targets, sandwiched between Al discs. Bremsstrahlung radiation of 4.1-MeV (1988We10) and 4.3-MeV (1995Ma69) endpoint energies was used to excite the sample. 1988We10 measured γ singles and γ(θ) at 100, 130 and 150°, using high-resolution Ge detectors. 1995Ma69 measured γ singles and γ(θ) at 90, 127 and 150° using three shielded HPGe detectors. These authors also measured the linear polarization of the γ radiation using a 4-sectored HPGe Compton polarimeter, placed at 97° with respect to the photon beam.

Three excited J=1 levels are discussed in terms of the collective isovector 1^+ "scissors" mode of excitation.

^{162}Dy Levels

Unless noted otherwise, the B(E1)↑ and B(M1)↑ values are those reported by 1995Ma69 and are derived from their $\Gamma_{\gamma 0}$ data.

E(level)[†]	Jπ[‡]	$T_{1/2}$[#@]	$\Gamma_{\gamma 0}$ (meV)[&]	Comments
0	0^+			
80	2^+			
1276[b] *1*	1^-	20 fs *4*		B(E1)↑=1.47×10^{-4} *25* The listed B(E1) value is from 1991Zi01. $T_{1/2}$: computed by the evaluator from the B(E1) value and the relative intensities of the two deexciting γ′s given by 1991Zi01. Note, however, that this γ branching differs markedly from the adopted γ branching, suggesting that the deduced $T_{1/2}$ value may be in error.
1983[a] *1*				Jπ: 1991Zi01 report $J^\pi=1^-$. However, this disagrees with the adopted value, 2^+.
2395	1^+[e]	11.1 fs *7*	27.3 *16*	B(M1)↑=0.52 *3* $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$ (meV)=18.7 *21* and Γ_2/Γ_0=0.54 *6* (1988We10), the evaluator computes $T_{1/2}$=10.3 fs *13*.
2520	1^-	7.5 fs *6*	27.7 *20*	B(E1)↑=5.0×10^{-5} *4* $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$ (meV)=14.2 *17* and Γ_2/Γ_0=1.13 *11* (1988We10), the evaluator computes $T_{1/2}$=7.1 fs *10*.
2537	1[e]	98 fs *21*	3.6 *7*	
2569	1^+[e]	39 fs *4*	8.7 *9*	B(M1)↑=0.13 *1*
2815	1[d]	39 fs *13*	6.1 *18*	
2900	1^+[e]	2.05 fs *13*	153 *9*	B(M1)↑=1.63 *10* $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$ (meV)=103 *11* and Γ_2/Γ_0=0.47 *3* (1988We10), the evaluator computes $T_{1/2}$=2.07 fs *24*.
2909	1[d]	22 fs *7*	7.6 *23*	
2929	1^-[e]	20.0 fs *21*	14.6 *14*	B(E1)↑=1.7×10^{-5} *2*
2965	1^+[e]	33 fs *5*	9.6 *12*	B(M1)↑=0.10 *1*
3061	1^+	3.9 fs *4*	95 *8*	B(M1)↑=0.86 *8* $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$ (meV)=67 *8* and Γ_2/Γ_0=0.29 *7* (1988We10), the evaluator computes $T_{1/2}$=4.1 fs *6*.
3577[c]	1			

[†] From 1995Ma69, unless noted otherwise.

[‡] The J^π values are from γ(θ) and γ linear-polarization measurements. From the ratio of γ intensities to the g.s. ($J^\pi=0^+$) and 80

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^{162}Dy(γ,γ') 1995Ma69,1988We10 (continued)

^{162}Dy Levels (continued)

(2^+) levels, transitions having ΔK=0 can be distinguished from those having ΔK=1. Unless noted otherwise, these are the same as the Adopted Values.

[#] Unless noted otherwise, computed by the evaluator from the $\Gamma_{\gamma 0}$ data and the relative intensities of the gammas to the 0^+ and 2^+ members of the g.s. band, as reported by 1995Ma69.

[@] The listed values take into account only the observed γ deexcitation to the 0^+ and 2^+ members of the g.s. band. To the extent that other γ transitions take place from these excited levels, these values may represent upper limits to the actual values. In situations similar to this, others (e.g., 1994Fr03,1989Pi05) have estimated that the γ branches to higher-lying (collective vibrational) levels may be of the order of 5%.

[&] Note that units of the width-related tabular data in 1988We10 should be meV and not (as shown there) MeV.

[a] From 1991Zi01.

[b] From 1990Zi05 and 1991Zi01.

[c] From 1990Zi05.

[d] Assigned (from the relative Iγ values of the deexciting gammas) as K=0 by 1995Ma69.

[e] Assigned (from the relative Iγ values of the deexciting gammas) as K=1 by 1995Ma69.

γ(^{162}Dy)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
1195	1.12 *27*	1276	1^-	80	2^+	E1	I_γ: from 1991Zi01.
1276	1.00	1276	1^-	0	0^+	E1	
1902	1.71 *22*	1983		80	2^+		I_γ: from 1991Zi01.
1983	1.00	1983		0	0^+		
2315	0.51 *3*	2395	1^+	80	2^+	[M1]	I_γ: other: 0.54 *6* (1988We10).
2395	1.00	2395	1^+	0	0^+	M1	
2440	1.19 *8*	2520	1^-	80	2^+	[E1]	I_γ: other: 1.13 *11* (1988We10).
2457	0.26 *13*	2537	1	80	2^+		
2489	0.39 *8*	2569	1^+	80	2^+	[M1]	
2520	1.00	2520	1^-	0	0^+	E1	
2537	1.00	2537	1	0	0^+		
2569	1.00	2569	1^+	0	0^+	M1	
2735	0.9 *3*	2815	1	80	2^+		
2815	1.00	2815	1	0	0^+		
2820	0.46 *2*	2900	1^+	80	2^+	[M1]	I_γ: other: 0.47 *3* (1988We10).
2829	1.8 *5*	2909	1	80	2^+		
2849	0.56 *8*	2929	1^-	80	2^+	[E1]	
2885	0.42 *10*	2965	1^+	80	2^+	[M1]	
2900	1.00	2900	1^+	0	0^+	M1	
2909	1.00	2909	1	0	0^+		
2929	1.00	2929	1^-	0	0^+	E1	
2965	1.00	2965	1^+	0	0^+	M1	
2981	0.29 *8*	3061	1^+	80	2^+	[M1]	I_γ: other: 0.29 *7* (1988We10).
3061	1.00	3061	1^+	0	0^+	M1	

[†] Deduced by the evaluator from the level-energy differences.

[‡] Relative γ branching from each level, from 1995Ma69, unless noted otherwise.

[#] From $\gamma(\theta)$ and γ linear polarization (1995Ma69).

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Level Scheme

Intensities: Relative I_γ