^{172}Yb(γ,γ′) 1990Zi01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 75,199 (1995)	31-May-1995

1990Zi01 (also 1991Zi01): E=4.1 MeV, bremsstrahlung radiation. Measured γ, γ(θ) (90°, 127°, 150°) relative to beam direction.

^{172}Yb Levels

E(level)‡	Jπ†	$T_{1/2}$[a]	$\Gamma^2_{\gamma0}/\Gamma$ (eV)	Comments
0	0+&			
79	2+&			
1599	1−	11 fs *3*	0.0058 *21*	Jπ: spin from γγ(θ), parity from Adopted Levels. $\Gamma_{\gamma0}$=0.015 eV *5*. B(E1)(↑)=1.07×10^{-4} *32*.
2210	1(−)#	4.6 fs *9*	0.016 *3*	$\Gamma_{\gamma0}$=0.039 eV *8*. B(E1)(↑)=1.05×10^{-4} *20*.
2573	1@	12 fs *3*	0.017 *5*	$\Gamma_{\gamma0}$=0.025 eV *7*. B(E1)(↑)=4.3×10^{-5} *11*. B(M1)(↑)=0.93 *10*.
2612	1@	12 fs *3*	0.013 *4*	$\Gamma_{\gamma0}$=0.023 eV *6*. B(E1)(↑)=3.6×10^{-5} *10*. B(M1)(↑)=0.33 *9*.
3002	1@	8.7 fs *24*	0.023 *7*	$\Gamma_{\gamma0}$=0.035 eV *9*. B(E1)(↑)=3.7×10^{-5} *10*. B(M1)(↑)=0.34 *9*.
3017	1	18 fs *9*	0.0032 *23*	$\Gamma_{\gamma0}$=0.009 eV *5*. B(E1)(↑)=1.0×10^{-5} *5*. For Iγ(2938γ)/Iγ(3017γ)=1.08 *36* and $\Gamma^2_{\gamma0}/\Gamma$=0.0055 eV *28*: $\Gamma_{\gamma0}$=0.011 eV *5*, B(E1)(↑)=1.2×10^{-5} *5*, B(M1)(↑)=0.11 *4*. Jπ: probable negative parity from K=0 (uncertain) assignment.
3072	1(−)#	6.1 fs *20*	0.014 *5*	$\Gamma_{\gamma0}$=0.032 eV *10*. B(E1)(↑)=3.2×10^{-5} *10*.
3096	1	17 fs *9*	0.0033 *22*	$\Gamma_{\gamma0}$=0.009 eV *5*. B(E1)(↑)=0.9×10^{-5} *5*. For Iγ(3017γ)/Iγ(3096γ)=0.46 *12* and $\Gamma^2_{\gamma0}/\Gamma$=0.0071 eV *30*: $\Gamma_{\gamma0}$=0.010 eV *3*, B(E1)(↑)=1.0×10^{-5} *3*, B(M1)(↑)=0.09 *3*. $T_{1/2}$=30 fs *9*.
3118	1(−)#	8 fs *4*	0.009 *5*	$\Gamma_{\gamma0}$=0.024 eV *10*. B(E1)(↑)=2.2×10^{-5} *10*.
3160	1(−)#	3.4 fs *10*	0.016 *6*	$\Gamma_{\gamma0}$=0.047 eV *14*. B(E1)(↑)=4.3×10^{-5} *13*.
3174	1(−)#	3.7 fs *11*	0.012 *4*	$\Gamma_{\gamma0}$=0.038 eV *11*. B(E1)(↑)=3.4×10^{-5} *10*. For Iγ(3096γ)/Iγ(3174γ)=1.86 *40* and $\Gamma^2_{\gamma0}/\Gamma$=0.0115 eV *43*: $\Gamma_{\gamma0}$=0.033 eV *10*, B(E1)(↑)=3.0×10^{-5} *9*. $T_{1/2}$=4.8 fs *14*.
3246	1(−)#	5.6 fs *23*	0.015 *7*	$\Gamma_{\gamma0}$=0.034 eV *14*. B(E1)(↑)=2.9×10^{-5} *12*.
3253	1@	12 fs *4*	0.017 *7*	$\Gamma_{\gamma0}$=0.025 eV *8*. B(E1)(↑)=2.1×10^{-5} *7*. B(M1)(↑)=0.19 *6*.
3393	1(−)#	2.7 fs *7*	0.022 *7*	$\Gamma_{\gamma0}$=0.061 eV *16*. B(E1)(↑)=4.5×10^{-5} *11*.
3545	1(−)#	1.6 fs *5*	0.023 *9*	$\Gamma_{\gamma0}$=0.080 eV *27*. B(E1)(↑)=5.1×10^{-5} *17*.
3604	1@	2.9 fs *8*	0.050 *15*	$\Gamma_{\gamma0}$=0.089 eV *22*. B(E1)(↑)=5.4×10^{-5} *14*. B(M1)(↑)=0.49 *12*.
3635	1(−)#	1.3 fs *3*	0.052 *14*	$\Gamma_{\gamma0}$=0.0136 eV *31*. B(E1)(↑)=8.1×10^{-5} *19*.
3863	1	2.1 fs *6*	0.047 *17*	Jπ: uncertain K=0 assignment. $\Gamma_{\gamma0}$=0.0100 eV *31*. B(E1)(↑)=5.0×10^{-5} *15*. B(M1)(↑)=0.45 *14*.

† J=1 assignment is from γγ(θ). Iγ(90°)/Iγ(127°)≈0.7 for g.s. transitions.

‡ Uncertainty is≈2 keV based on assumed 2 keV uncertainty on Eγ′s.

K=0 and π=− assignment (1990Zi01) from a comparison of the reduced transition probabilities with the predictions of the Alaga rules.

@ K=1 assignment (1990Zi01) from a comparison of the reduced transition probabilities with the predictions of the Alaga rules. Parity is unknown.

& From Adopted Levels.

Continued on next page (footnotes at end of table)

^{172}Yb(γ,γ') 1990Zi01 (continued)

^{172}Yb Levels (continued)

[a] Deduced (evaluator) from $\Gamma_{\gamma 0}$ (1990Zi01) and branching ratio. It is assumed that transitions to levels other than the ground state and the first 2^+ state do not contribute significantly.

$\gamma(^{172}Yb)$

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Comments
79	2^+	79		0	0^+	E_γ: rounded off value from adopted gammas.
1599	1^-	1520	100	79	2^+	
		1599	61 *12*	0	0^+	I_γ: 53 *11* (1991Zi01).
2210	$1^{(-)}$	2131	100	79	2^+	
		2210	65 *6*	0	0^+	I_γ: 58 *5* (1991Zi01).
2573	1	2494	51 *9*	79	2^+	
		2573	100	0	0^+	
2612	1	2533	70 *13*	79	2^+	
		2612	100	0	0^+	
3002	1	2923	51 *10*	79	2^+	
		3002	100	0	0^+	
3017	1	2938	100	79	2^+	
		3017[‡]	54 *24*	0	0^+	I_γ: other: 93 *31* (1990Zi01).
3072	$1^{(-)}$	2993	100	79	2^+	
		3072	76 *17*	0	0^+	
3096	1	3017[‡]	185 *77*	79	2^+	I_γ: other: 46 *12* (1990Zi01).
		3096[‡]	100	0	0^+	
3118	$1^{(-)}$	3039	100	79	2^+	
		3118	63 *19*	0	0^+	
3160	$1^{(-)}$	3081	100	79	2^+	
		3160	54 *10*	0	0^+	
3174	$1^{(-)}$	3096[‡]	227 *45*	79	2^+	I_γ: other: 186 *40* (1990Zi01).
		3174	100	0	0^+	
3246	$1^{(-)}$	3167	100	79	2^+	
		3246	73 *21*	0	0^+	
3253	1	3174	46 *11*	79	2^+	
		3253	100	0	0^+	
3393	$1^{(-)}$	3314	100	79	2^+	
		3393	57 *9*	0	0^+	
3545	$1^{(-)}$	3466	100	79	2^+	
		3545	40 *9*	0	0^+	
3604	1	3525	76 *13*	79	2^+	
		3604	100	0	0^+	
3635	$1^{(-)}$	3556	100	79	2^+	
		3635	61 *8*	0	0^+	
3863	1	3784	100	79	2^+	
		3863	88 *19*	0	0^+	

[†] From 1990Zi01 for g.s. transitions. Energies of γ rays to 79 level are from level energy differences. Uncertainty is not given by 1990Zi01 but is expected to be≈2 keV from quoted detector resolution and displayed spectrum.

[‡] Multiply placed.

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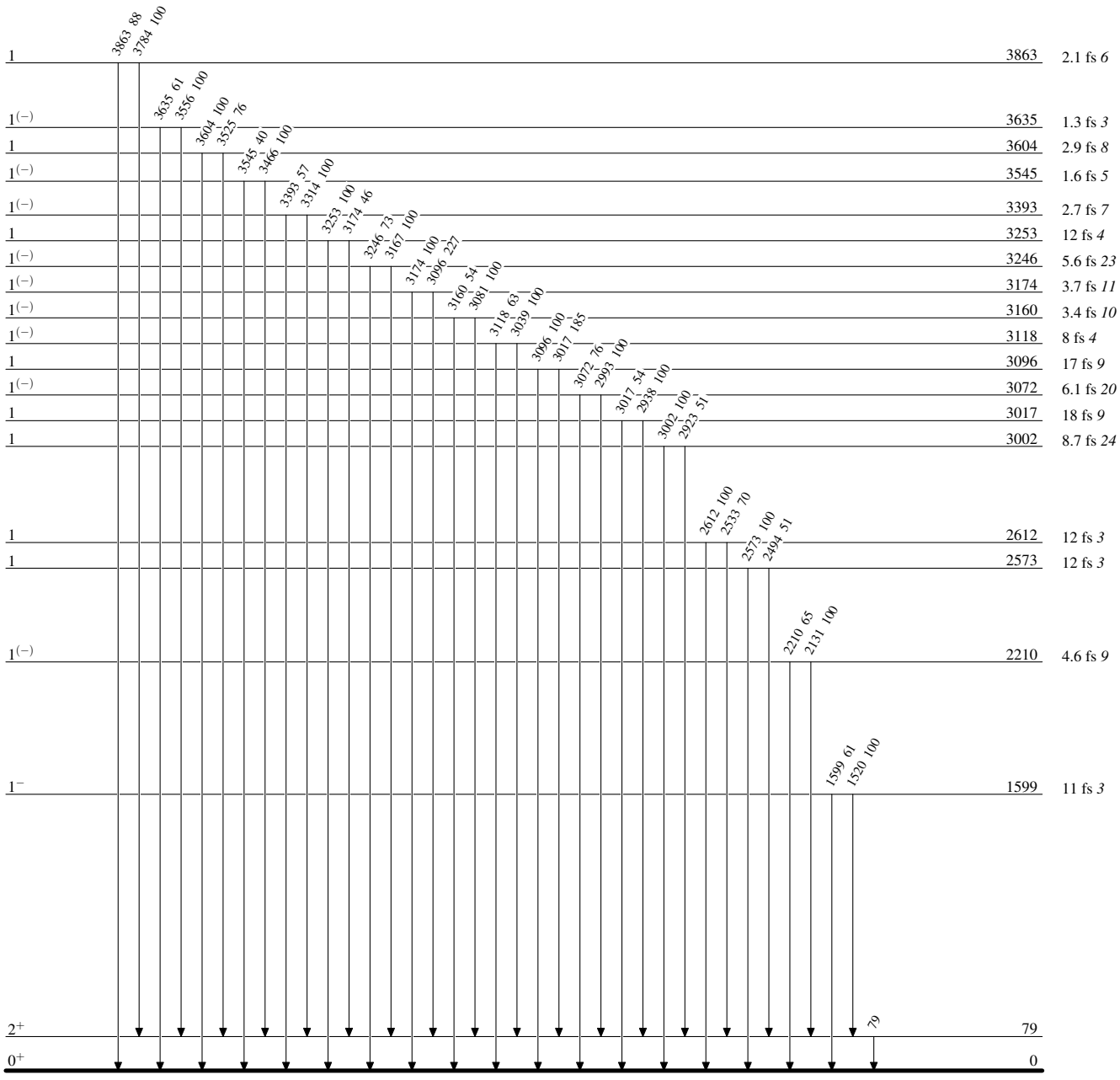
Level Scheme

Intensities: Relative photon branching from each level



$^{172}_{70}Yb_{102}$