^{101}Y β^- decay 1995Lh01,1983Wo10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2006

Parent: ^{101}Y: E=0.0; J^π=(5/2$^+$); $T_{1/2}$=0.45 s *2*; Q(β^-)=8545 *90*; %β^- decay=100.0

Activity: on-line ms TRISTAN (1983Wo10), JOSEF (1987Oh01), ISOLDE (1995Lh01).

Measured: γ, $\gamma\gamma$, γ(t), $\beta\gamma$(t).

Level scheme is from 1995Lh01.

1995Lh01 have derived an inertial parameter of 19.4 keV for the 3/2 g.s. band and 15.3 keV for the 5/2$^-$ band. 1983Wo10 previously assigned this band as the [422] Nilsson state, now 1995Lh01 assign it as the [532].

^{101}Zr Levels

E(level)	J^π	$T_{1/2}$	Comments
0[†]	(3/2$^+$)	2.3 s *1*	$T_{1/2}$: from Adopted Levels.
98.16[†] *4*	(5/2$^+$)	0.6 ns *2*	$T_{1/2}$: Average of 0.9 ns *3* (1987Oh01) and 0.39 ns *18* (1995Lh01).
216.67[‡] *5*	(5/2$^-$)		
231.79[†] *6*	(7/2$^+$)		
321.10[‡] *6*	(7/2$^-$)	0.3 ns *1*	$T_{1/2}$: From $\beta\gamma$(t) coincidence in ^{101}Y decay (1995Lh01).
408.25[†] *8*	(9/2$^+$)		
467.77[‡] *9*	(9/2$^-$)		
673.52 *16*	(3/2,5/2)		J^π: Possible [532]5/2 Nilsson state.
744.01 *10*	(3/2,5/2)		J^π: Possible [541]3/2 Nilsson state.
759.49 *6*	(3/2$^+$)		J^π: Possible [422]3/2 Nilsson state.
786.66 *11*	(5/2,7/2)		
808.46 *11*	(5/2,7/2)		
827.78 *10*			
845.19 *20*	(7/2$^-$)		J^π: Possible [523]7/2 Nilsson state.
880.37 *10*			
902.48 *19*			
958.76 *25*			
1038.4 *3*			
1297.90 *11*			
1398.55 *13*	(3/2,5/2)$^+$		J^π: Possible [402]3/2 Nilsson state.
1529.93 *14*			
2023.17 *16*	(3/2,5/2)$^+$		
2082.8 *4*			

[†] Band(A): the K^π=3/2$^+$ g.s. band could Be the 3/2 [411] Nilsson state.

[‡] Band(B): the K^π=5/2$^-$ band could Be the 5/2 [532] Nilsson state.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(6.46×10^3 *9*)	2082.8	1.3 *5*	6.24 *18*	av Eβ=2924
(6.52×10^3 *9*)	2023.17	4.9 *14*	5.68 *14*	av Eβ=2953
(7.02×10^3 *9*)	1529.93	3.3 *11*	6.00 *16*	av Eβ=3190
(7.15×10^3 *9*)	1398.55	12 *4*	5.48 *16*	av Eβ=3253
(7.25×10^3 *9*)	1297.90	2.3 *14*	6.2 *3*	av Eβ=3302
(7.51×10^3 *9*)	1038.4	0.8 *4*	6.75 *23*	av Eβ=3426
(7.59×10^3 *9*)	958.76	1.2 *5*	6.59 *19*	av Eβ=3465
(7.64×10^3 *9*)	902.48	1.1 *4*	6.65 *17*	av Eβ=3492

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^{101}Y β^- decay 1995Lh01,1983Wo10 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(7.66×10^3 *9*)	880.37	5.2 *15*	5.98 *14*	av Eβ=3502
(7.70×10^3 *9*)	845.19	0.9 *4*	6.75 *20*	av Eβ=3519
(7.72×10^3 *9*)	827.78	2.9 *9*	6.24 *15*	av Eβ=3528
(7.74×10^3 *9*)	808.46	3.0 *9*	6.24 *14*	av Eβ=3537
(7.76×10^3 *9*)	786.66	4.7 *14*	6.05 *14*	av Eβ=3548
(7.79×10^3 *9*)	759.49	13 *4*	5.61 *15*	av Eβ=3561
(7.80×10^3 *9*)	744.01	3.1 *10*	6.24 *15*	av Eβ=3568
(7.87×10^3 *9*)	673.52	2.9 *11*	6.28 *18*	av Eβ=3602
(8.08×10^3 *9*)	467.77	1.1 *4*	6.76^{1u} *17*	av Eβ=3701
(8.22×10^3 *9*)	321.10	2.5 *9*	6.44 *17*	av Eβ=3771
(8.31×10^3 *9*)	231.79	1.9 *13*	6.6 *3*	av Eβ=3814
(8.33×10^3 *9*)	216.67	8 *3*	5.96 *17*	av Eβ=3821
(8.45×10^3 *9*)	98.16	3 *3*	>5.9	av Eβ=3878
(8.55×10^3 *9*)	0	20 *20*	>5.3	av Eβ=3925

[†] Absolute intensity per 100 decays.

$\gamma(^{101}Zr)$

Iγ normalization: from Iγ(98.2)=30% 8 with Iγ/Iγ(205.6γ) in ^{101}Zr decay and with Iγ(205.6γ) taken as 6.1% 15.

E$_\gamma$[†]	I$_\gamma$[†@]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	δ	α[&]	Comments
87.44[‡] *19*	45 *14*	408.25	(9/2$^+$)	321.10	(7/2$^-$)	[E1]		0.168 *3*	α(K)=0.1480 *23*; α(L)=0.0168 *3*; α(M)=0.00290 *5*; α(N+..)=0.000427 *7* α(N)=0.000402 *7*; α(O)=2.51×10^{-5} *4*
89.35[‡] *11*	14 *6*	321.10	(7/2$^-$)	231.79	(7/2$^+$)	[E1]		0.158	α(K)=0.1389 *20*; α(L)=0.01579 *23*; α(M)=0.00272 *4*; α(N+..)=0.000401 *6* α(N)=0.000377 *6*; α(O)=2.36×10^{-5} *4* α=0.158; α(K)=0.1396; α(L)=0.01573; α(M)=0.00271; α(N+..)=0.00046 B(E1)(W.u.)=0.00011 *6*
98.21 *6*	100	98.16	(5/2$^+$)	0	(3/2$^+$)	M1(+E2)	0.3 *+2−3*	0.30 *10*	α(K)=0.25 *10*; α(L)=0.034 *18*; α(M)=0.006 *4*; α(N+..)=0.0009 *5* α(N)=0.0008 *4*; α(O)=4.7×10^{-5} *15* α(K)exp=0.24 *6* α=0.30 *10*; α(K)=0.25 *10*; α(L)=0.035 *18*; α(M)=0.006 *4*; α(N+..)=0.0010 *5* B(M1)(W.u.)=(0.036 *13*); B(E2)(W.u.)=(3.E+2 *+4−3*) Mult.: from the intensity ratio I(Kα x ray)/Iγ(98) averaged over the gates on the 134,223,310,661,688,575 and 1300 transitions.

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^{101}Y β^- decay 1995Lh01,1983Wo10 (continued)

$\gamma(^{101}Zr)$ (continued)

E_γ [†]	I_γ [†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α [&]	Comments
104.43 *7*	100 *5*	321.10	(7/2$^-$)	216.67	(5/2$^-$)	M1+E2	0.4 *+2−3*	0.29 *10*	α(K)=0.24 *8*; α(L)=0.035 *15*; α(M)=0.006 *3*; α(N+..)=0.0009 *4* α(N)=0.0008 *4*; α(O)=4.4×10^{-5} *13* α(exp)=0.38 *20* (1995Lh01); α(K)exp=0.25 *10* B(M1)(W.u.)=(0.029 *11*); B(E2)(W.u.)=(4.E+2 *4*) Mult.: from the ratio I(Kα x ray)/Iγ(104) in the 217 gate. E_γ: γ not reported by 1987Oh01, but could be obscured by contamination.
118.56[‡] *12*	12.1 *8*	216.67	(5/2$^-$)	98.16	(5/2$^+$)	[E1]		0.0691	α(K)=0.0608 *9*; α(L)=0.00684 *10*; α(M)=0.001180 *17*; α(N+..)=0.000175 *3* α(N)=0.0001646 *24*; α(O)=1.061×10^{-5} *16* α=0.0691; α(K)=0.0610; α(L)=0.00682; α(M)=0.00117; α(N+..)=0.00020
133.67 *6*	100 *4*	231.79	(7/2$^+$)	98.16	(5/2$^+$)	M1		0.0913	α(K)=0.0802 *12*; α(L)=0.00927 *13*; α(M)=0.001614 *23*; α(N+..)=0.000244 *4* α(N)=0.000228 *4*; α(O)=1.579×10^{-5} *23* α(exp)=0.00 *14* Mult.: from the intensity balance, Itotal(98)=Itotal(133) in the gate.
146.64 *7*	100 *5*	467.77	(9/2$^-$)	321.10	(7/2$^-$)	[M1]		0.0711	α(K)=0.0624 *9*; α(L)=0.00720 *11*; α(M)=0.001253 *18*; α(N+..)=0.000190 *3* α(N)=0.0001774 *25*; α(O)=1.229×10^{-5} *18*
176.44 *9*	92 *5*	408.25	(9/2$^+$)	231.79	(7/2$^+$)	[M1]		0.0434	α(K)=0.0381 *6*; α(L)=0.00438 *7*; α(M)=0.000761 *11*; α(N+..)=0.0001153 *17* α(N)=0.0001078 *16*; α(O)=7.49×10^{-6} *11*
216.68 *7*	100 *4*	216.67	(5/2$^-$)	0	(3/2$^+$)	[E1]		0.01203	α(K)=0.01061 *15*; α(L)=0.001180 *17*; α(M)=0.000204 *3*; α(N+..)=3.06×10^{-5} *5* α(N)=2.87×10^{-5} *4*; α(O)=1.93×10^{-6} *3*
222.97 *7*	6.1 *5*	321.10	(7/2$^-$)	98.16	(5/2$^+$)	[E1]		0.0112	α=0.0112; α(K)=0.00978; α(L)=0.00108 B(E1)(W.u.)=3.8×10^{-5} *13*
231.91 *15*	45 *3*	231.79	(7/2$^+$)	0	(3/2$^+$)	[E2]		0.0530	α(K)=0.0459 *7*; α(L)=0.00595 *9*; α(M)=0.001035 *15*; α(N+..)=0.0001502 *22* α(N)=0.0001420 *21*; α(O)=8.15×10^{-6} *12*
236.20[‡] *23*	1.0 *4*	467.77	(9/2$^-$)	231.79	(7/2$^+$)				
251.18[‡] *24*	0.9 *3*	467.77	(9/2$^-$)	216.67	(5/2$^-$)				
309.98 *12*	2.6 *3*	408.25	(9/2$^+$)	98.16	(5/2$^+$)	[E2]		0.019	α=0.019; α(K)=0.01692; α(L)=0.00208

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^{101}Y β^- decay 1995Lh01,1983Wo10 (continued)

$\gamma(^{101}Zr)$ (continued)

E_γ †	I_γ †@	E_i(level)	J_i^π	E_f	J_f^π
377.49‡ *22*	0.8 *3*	845.19	(7/2$^-$)	467.77	(9/2$^-$)
378.1‡ *7*	0.5 *3*	786.66	(5/2,7/2)	408.25	(9/2$^+$)
423.0‡ *7*	0.6 *3*	744.01	(3/2,5/2)	321.10	(7/2$^-$)
487.44 *19*	3.6 *5*	808.46	(5/2,7/2)	321.10	(7/2$^-$)
494.2‡ *3*	1.2 *5*	902.48		408.25	(9/2$^+$)
524.0 *4*	0.9 *4*	845.19	(7/2$^-$)	321.10	(7/2$^-$)
527.32 *12*	6.5 *15*	744.01	(3/2,5/2)	216.67	(5/2$^-$)
x551.7 *3*	1.2 *6*				
554.92 *14*	6.1 *12*	786.66	(5/2,7/2)	231.79	(7/2$^+$)
571.1 *6*	1.2 *6*	786.66	(5/2,7/2)	216.67	(5/2$^-$)
575.47 *18*	5.0 *7*	673.52	(3/2,5/2)	98.16	(5/2$^+$)
577.2‡ *5*	1.2 *5*	808.46	(5/2,7/2)	231.79	(7/2$^+$)
592.1‡ *3*	2.4 *8*	808.46	(5/2,7/2)	216.67	(5/2$^-$)
596.4‡ *4*	0.9 *5*	827.78		231.79	(7/2$^+$)
x611.9 *3*	1.6 *3*				
x624.3 *3*	1.2 *3*				
645.9‡ *5*	0.9 *4*	744.01	(3/2,5/2)	98.16	(5/2$^+$)
648.59 *16*	8.1 *14*	880.37		231.79	(7/2$^+$)
661.39 *12*	14.4 *11*	759.49	(3/2$^+$)	98.16	(5/2$^+$)
670.67 *24*	1.4 *5*	902.48		231.79	(7/2$^+$)
673.2 *3*	4.5 *23*	673.52	(3/2,5/2)	0	(3/2$^+$)
688.40 *17*	6.2 *8*	786.66	(5/2,7/2)	98.16	(5/2$^+$)
710.1‡ *6*	0.6 *4*	808.46	(5/2,7/2)	98.16	(5/2$^+$)
727.3 *5*	1.5 *6*	958.76		231.79	(7/2$^+$)
729.57 *16*	6.2 *7*	827.78		98.16	(5/2$^+$)
744.02 *14*	2.2 *5*	744.01	(3/2,5/2)	0	(3/2$^+$)
746.7 *6*	1.4 *4*	845.19	(7/2$^-$)	98.16	(5/2$^+$)
759.45 *7*	30 *3*	759.49	(3/2$^+$)	0	(3/2$^+$)
782.2‡ *4*	1.4 *5*	880.37		98.16	(5/2$^+$)
786.5 *3*	1.6 *5*	786.66	(5/2,7/2)	0	(3/2$^+$)
804.5 *5*	1.1 *5*	902.48		98.16	(5/2$^+$)
808.29# *15*	2.2 *6*	808.46	(5/2,7/2)	0	(3/2$^+$)
827.77 *13*	2.6 *6*	827.78		0	(3/2$^+$)
x846.7 *3*	1.5 *4*				
x855.8 *3*	1.5 *5*				
860.8 *7*	1.1 *5*	958.76		98.16	(5/2$^+$)
880.36 *13*	7.8 *11*	880.37		0	(3/2$^+$)
940.2‡ *3*	2.7 *8*	1038.4		98.16	(5/2$^+$)
x954.4 *3*	1.0 *5*				
958.6# *3*	1.4 *8*	958.76		0	(3/2$^+$)
1081.3‡ *6*	1.7 *8*	1297.90		216.67	(5/2$^-$)
1167.0 *3*	4.6 *7*	1398.55	(3/2,5/2)$^+$	231.79	(7/2$^+$)
x1248.1 *4*	1.5 *5*				
1297.7 *4*	5.1 *16*	1529.93		231.79	(7/2$^+$)
1297.89 *11*	6 *4*	1297.90		0	(3/2$^+$)
1300.26 *17*	29.7 *23*	1398.55	(3/2,5/2)$^+$	98.16	(5/2$^+$)
1398.60 *20*	5.8 *12*	1398.55	(3/2,5/2)$^+$	0	(3/2$^+$)
1432.8 *9*	1.5 *6*	1529.93		98.16	(5/2$^+$)
1529.95 *15*	4.5 *7*	1529.93		0	(3/2$^+$)
1925.5 *4*	4.9 *11*	2023.17	(3/2,5/2)$^+$	98.16	(5/2$^+$)
1984.7 *5*	3.0 *6*	2082.8		98.16	(5/2$^+$)

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^{101}Y β^- decay 1995Lh01,1983Wo10 (continued)

$\gamma(^{101}Zr)$ (continued)

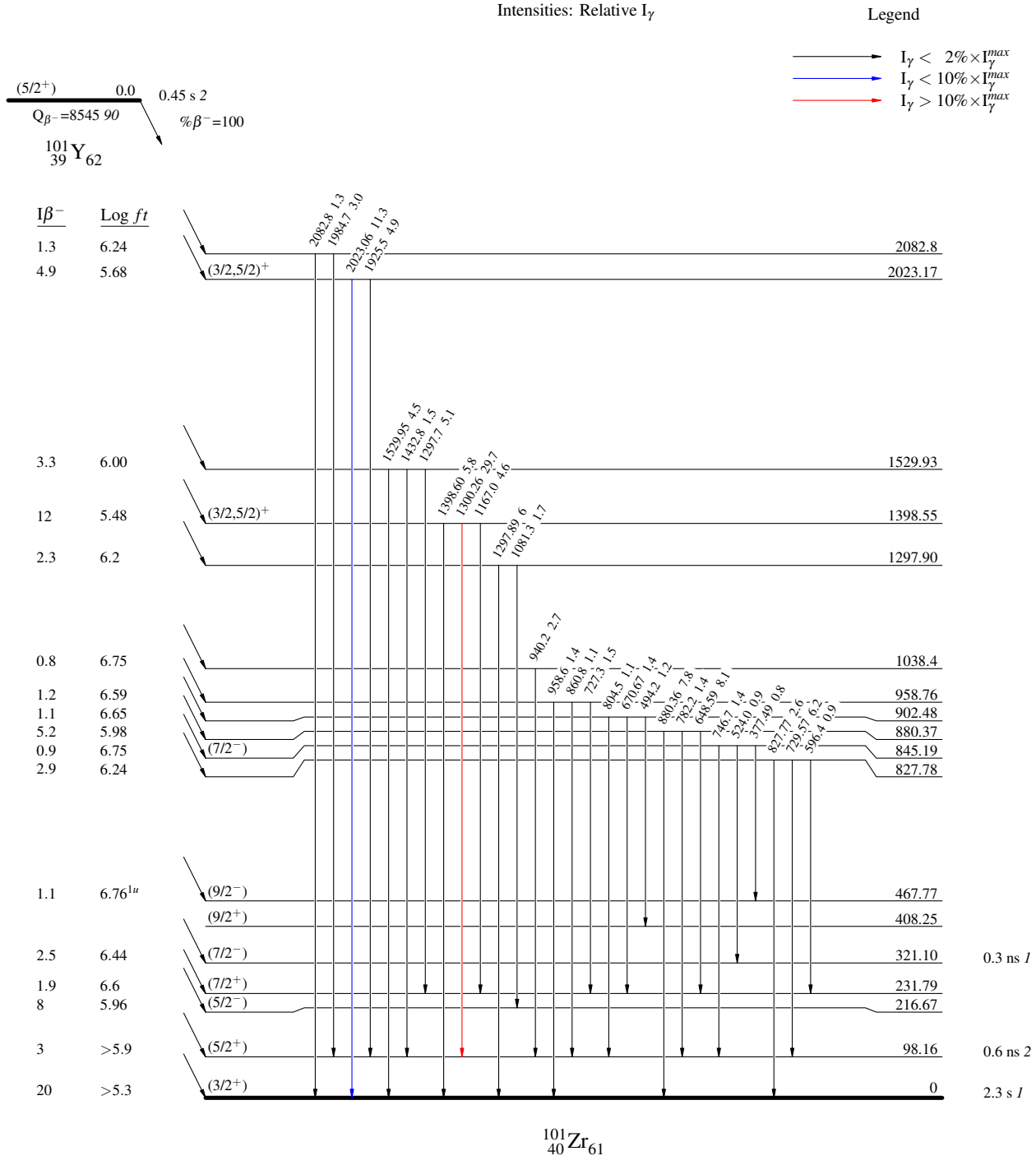
E_γ [†]	I_γ [†@]	E_i(level)	J_i^π	E_f	J_f^π
2023.06[‡] *17*	11.3 *10*	2023.17	(3/2,5/2)$^+$	0	(3/2$^+$)
2082.8[#] *5*	1.3 *5*	2082.8		0	(3/2$^+$)

† From 1995Lh01.
‡ Seen only in coincidences.
# Not seen in the projection of coincidence events.
@ For absolute intensity per 100 decays, multiply by 0.30 *8*.
& 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.
x γ ray not placed in level scheme.

^{101}Y β^- decay 1995Lh01,1983Wo10

Decay Scheme

Intensities: Relative I_γ

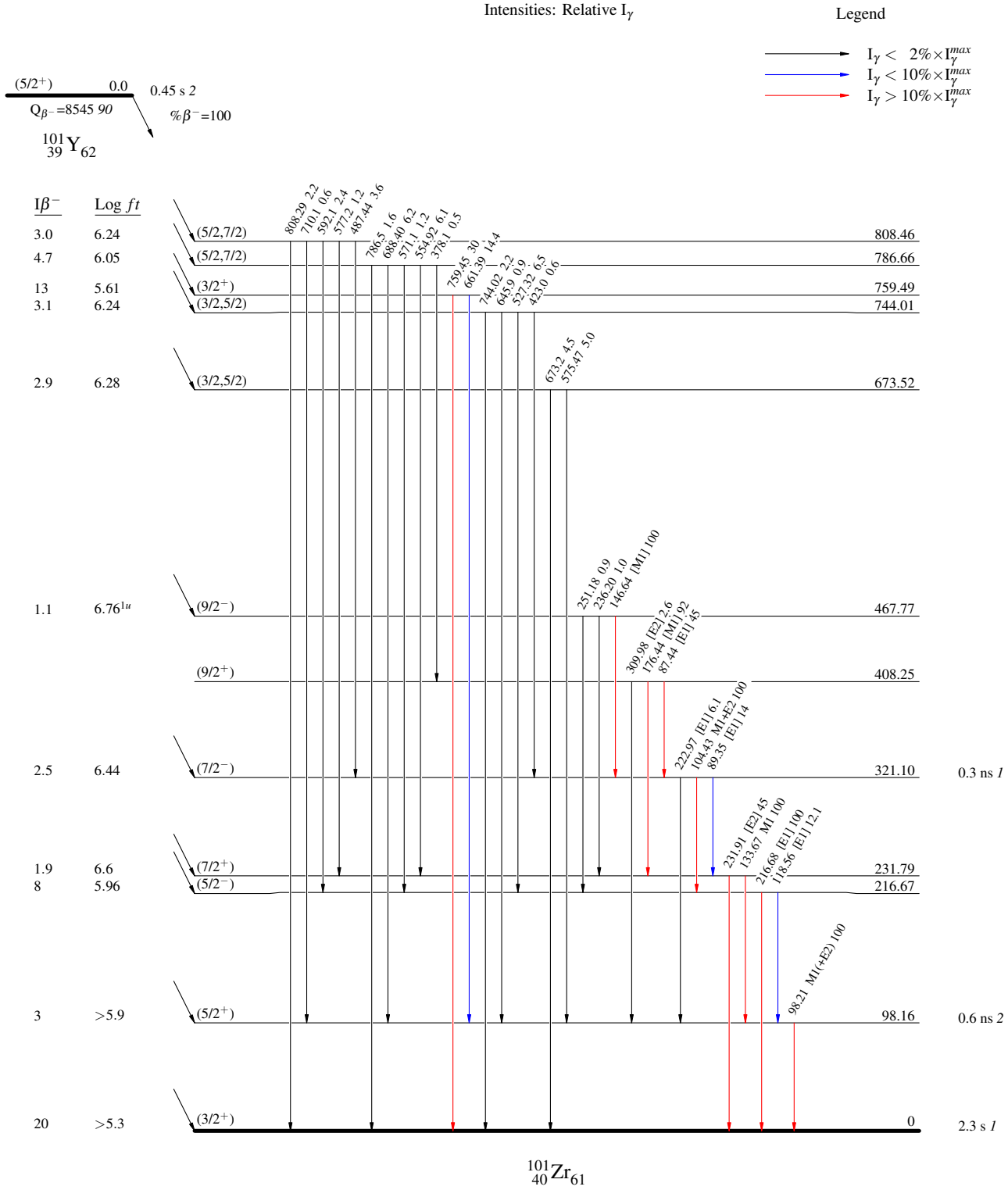


^{101}Y β^- decay 1995Lh01,1983Wo10

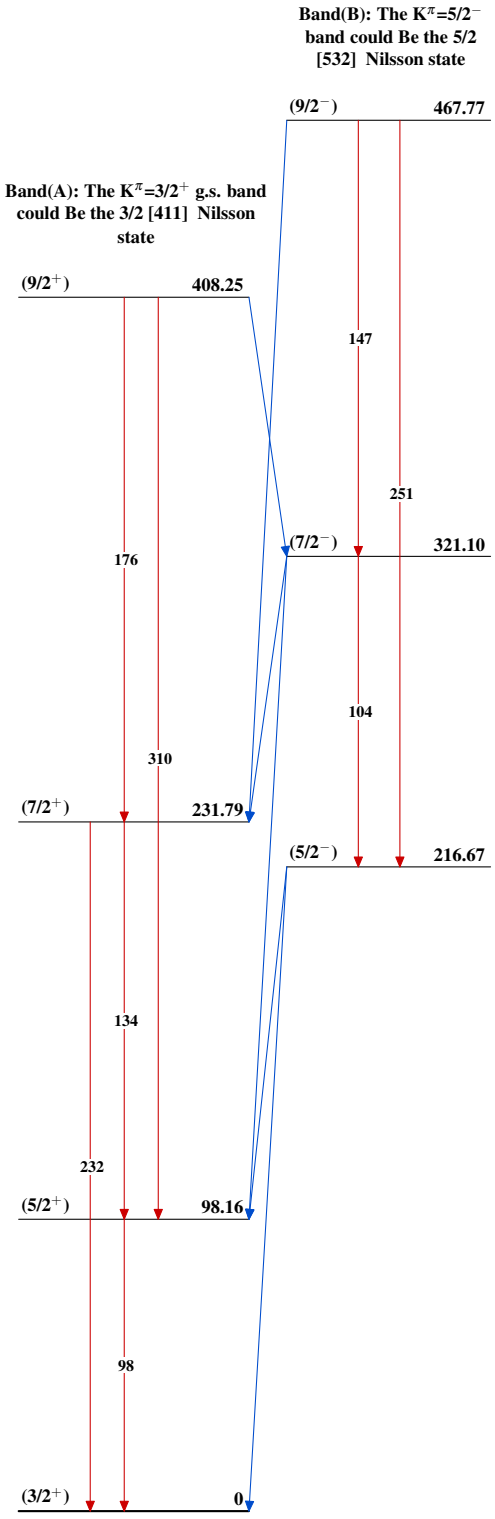
Decay Scheme (continued)

Intensities: Relative I_γ

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



^{101}Y β^- decay 1995Lh01,1983Wo10



$^{101}_{40}Zr_{61}$