^{96}Zr(p,nγ) 1984Ke12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni	NDS 109,2501 (2008)	1-Apr-2008

1984Ke12: E=1.3-5.1 MeV; measured: γ, γγ, γ-threshold E(p); Hauser-Feshbach analysis of σ(p,nγ).
1980Do03: E=1.6 MeV, 2.7 MeV, and 3.3 MeV; measured: γ, γγ.
1980Ar17: E=4.0 MeV; measured: γ, ce; deduced α(K)exp, α(L+...)exp.
1972Co02: E=3.5 MeV to 5.0 MeV; measured: γ, γγ, γγ(t), nγ(t), ce; deduced α(K)exp and α(L+...)exp.

^{96}Nb Levels

E(level)†	Jπ‡	$T_{1/2}$	E(level)†	Jπ‡	E(level)†	Jπ‡
0	6^+		867.8 *3*	(3^-)	1270.19 *21*	
44.19 *6*	(5^+)		1002.67 *18*	$(3^-,2^-)$	1325.6? *4*	(4)
146.10 *10*	(4^+)	<0.8# ns	1045.4 *4*	(4,3)	1346.3 *3*	
184.58 *12*	(3^+)	<0.8# ns	1140.7 *3*	$(0^-,2)$	1368.5 *3*	
511.84 *15*	(2^-)	<0.4# ns	1156.1 *5*		1498.5 *4*	(0,3)
634.96 *19*	(2^+)	<1.4@ ns	1242.4? *4*	(3)	1519.9? *6*	(3,0)
694.62 *16*	(3^-)	<1.4@ ns	1258.2 *8*		1614.7? *4*	

† From least-squares fit to Eγ, unless noted otherwise.
‡ Adopted values.
# From γγ(t) (1972Co02).
@ From nγ(t) (1972Co02).

^{96}Zr(p,nγ) 1984Ke12 (continued)

γ(^{96}Nb)

E_γ ‡	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	δ	α &	Comments
38.48 # 6		184.58	(3+)	146.10	(4+)				
44.19 # 6		44.19	(5+)	0	6+				
101.91 8	168 3	146.10	(4+)	44.19	(5+)	M1		0.214	α(K)=0.188 3; α(L)=0.0221 4; α(M)=0.00390 6; α(N)=0.000569 8; α(O)=3.22×10^{-5} 5 α(N+..)=0.000601 9 Mult.: K/L+M=7.09 29; E(L+M)C=0.0266 22.
182.80 8	38.6 8	694.62	(3−)	511.84	(2−)	M1		0.0438	α(K)=0.0385 6; α(L)=0.00445 7; α(M)=0.000786 11; α(N)=0.0001149 17; α(O)=6.57×10^{-6} 10 α(N+..)=0.0001214 17 Mult.: α(K)exp=0.031 8, E(L+M)C=0.0052 7.
x203.09 10	1.04 10								
x221.82 10	0.79 18								
267.5 a 2	0.94 16	1270.19		1002.67	(3−,2−)				
x269.70 20	0.60 14								
308.05 12	13.2 4	1002.67	(3−,2−)	694.62	(3−)	M1+E2	1.3 +13−5	0.0174 24	α(K)=0.0152 20; α(L)=0.0019 3; α(M)=0.00033 5; α(N)=4.7×10^{-5} 7; α(O)=2.4×10^{-6} 3 α(N+..)=5.0×10^{-5} 8 Mult.: α(K)exp=0.015 2.
327.29 12	100.0 4	511.84	(2−)	184.58	(3+)	E1		0.00409	α(K)=0.00361 5; α(L)=0.000402 6; α(M)=7.06×10^{-5} 10; α(N)=1.029×10^{-5} 15; α(O)=5.80×10^{-7} 9 α(N+..)=1.087×10^{-5} 16 Mult.: α(K)exp=0.0043 7; E(L+M)C=0.00058 14.
356.01 # 25	<11.8	867.8	(3−)	511.84	(2−)	M1		0.00798	α(K)=0.00702 10; α(L)=0.000796 12; α(M)=0.0001403 20; α(N)=2.06×10^{-5} 3 α(O)=1.191×10^{-6} 17; α(N+..)=2.17×10^{-5} 3 Mult.: α(K)exp=0.0059 12.
450.37 16	32.3 9	634.96	(2+)	184.58	(3+)	M1		0.00451	α(K)=0.00397 6; α(L)=0.000447 7; α(M)=7.88×10^{-5} 11; α(N)=1.155×10^{-5} 17; α(O)=6.72×10^{-7} 10 α(N+..)=1.222×10^{-5} 18 Mult.: α(K)exp=0.0042 5.
510.0 @ 2	7.9 22	694.62	(3−)	184.58	(3+)				
x515.8 2	4.5 20								
575.6 2	5.41 26	1270.19		694.62	(3−)				
628.90 24	6.77 23	1140.7	(0−,2)	511.84	(2−)				
644.3 5	4.86 26	1156.1		511.84	(2−)				
651.7 2	2.59 22	1346.3		694.62	(3−)				
674.0 6	3.2 4	1368.5		694.62	(3−)				
733.5 3	4.16 24	1368.5		634.96	(2+)				
746.4 8	<2.0	1258.2		511.84	(2−)				

^{96}Zr(p,nγ) 1984Ke12 (continued)

γ(^{96}Nb) (continued)

E_γ ‡	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	E_γ ‡	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π
758.3# *4*	<2.8	1270.19		511.84	(2$^-$)	1008.1#[a] *6*		1519.9?	(3,0)	511.84	(2$^-$)
818.0 *3*	1.88 *23*	1002.67	(3$^-$,2$^-$)	184.58	(3$^+$)	1057.8[a] *4*	8.9 *3*	1242.4?	(3)	184.58	(3$^+$)
x855.35 *32*	4.62 *25*					1179.5[a] *4*	3.81 *22*	1325.6?	(4)	146.10	(4$^+$)
899.3 *4*	5.92 *25*	1045.4	(4,3)	146.10	(4$^+$)	x1294.2 *4*	1.64 *21*				
986.7 *4*	2.78 *22*	1498.5	(0,3)	511.84	(2$^-$)	1430.1[a] *4*	1.56 *17*	1614.7?		184.58	(3$^+$)

† From α(K)exp and α(L+...)exp if the 101.75γ is M1 (1980Ar17).
‡ From 1984Ke12 measured at E(p)=4.7 MeV.
# Authors take value from 1980Do03.
@ From γγ.
& 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.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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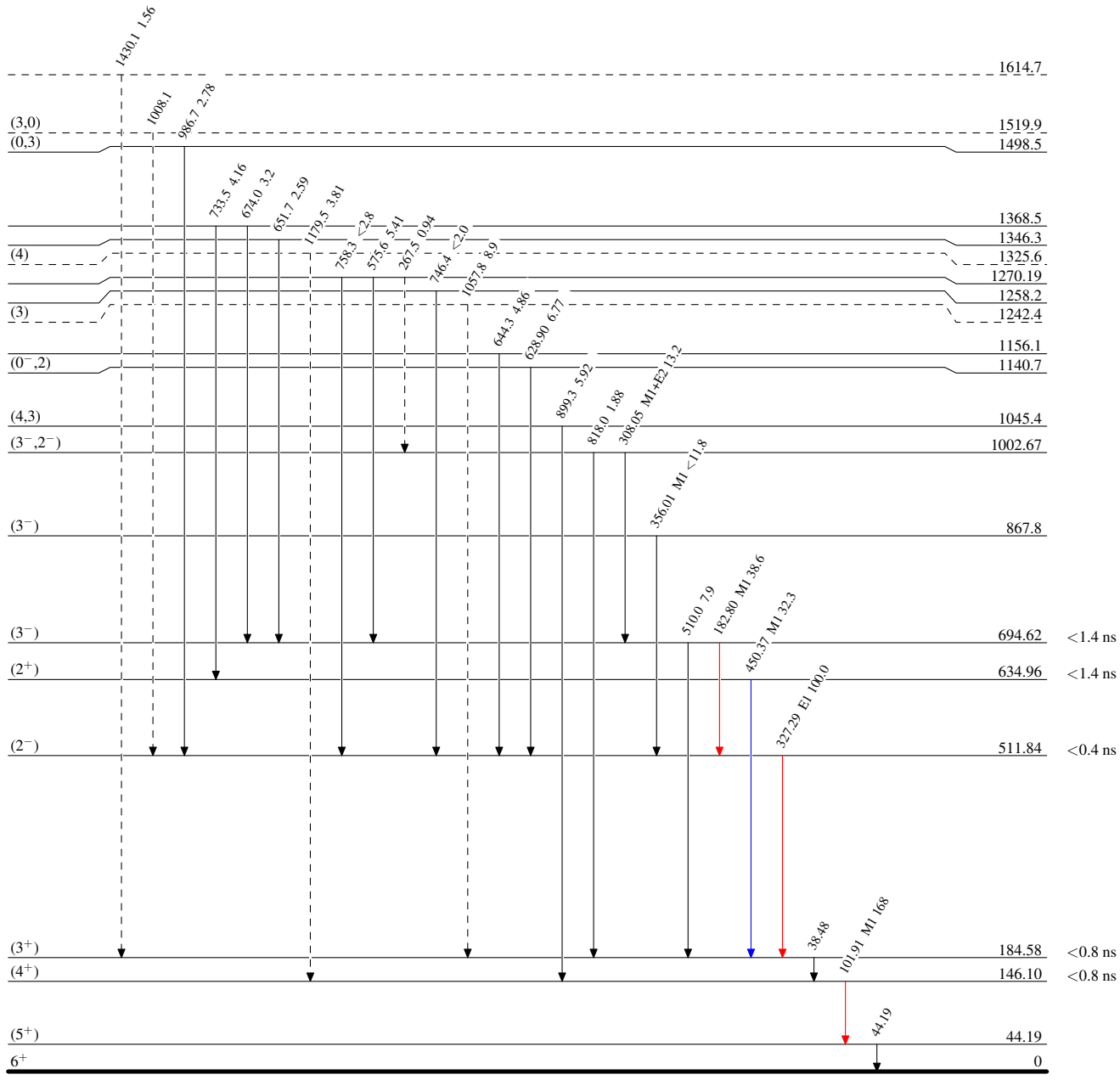
Level Scheme

Intensities: Relative I_γ

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



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