Coulomb excitation 1967Ki02

History

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

Others: 1956Te26, 1962Ri09, 1974Er04, 1987Ar17.
1967Ki02: ^{101}Ru($\alpha,\alpha'\gamma$) E=5.66, 6.25, 6.86, 7.03 MeV (semi).
Measured $\gamma\gamma$ coin (scin-semi), excit, absolute Iγ per incident α.
1962Ri09: ^{101}Ru(^{20}Ne,^{20}Ne$'\gamma$) E=14.36, 15.38 MeV (scin).
1974Er04: ^{101}Ru(^{14}N,^{14}N$'\gamma$) E=38 MeV, (^{12}C,^{12}C$'\gamma$) E=35 MeV (semi).
1987Ar17: Ru(p,p$'\gamma$) E=3 MeV, (semi).

^{101}Ru Levels

E(level)	J$^\pi$	$T_{1/2}$	Comments
0.0	5/2$^+$	stable	
127.2	3/2$^+$	0.655 ns *4*	B(E2)↑=0.036 *3* (1967Ki02) $T_{1/2}$: from Adopted Levels. B(E2)↑: from εB(E2)=0.0306 *24*, weighted av. of 0.028 *4* (1969Ri09) and 0.032 *3* (1967Ki02). Others: 0.030 *5* (1962Ri09) at E(^{20}Ne)=14.36 MeV, 0.036 *5* (1962Ri09) at E(^{20}Ne)=15.38 MeV, 0.046 *5* (1987Ar17). 1971Po02 studied isomer shift of 127γ Mossbauer spectrum.
306.8	7/2$^+$		B(E2)↑=0.007 *2* (1967Ki02) B(E2)↑: other: 0.024 *3* (1987Ar17).
311.2	5/2$^+$		B(E2)=0.020 *3* (1967Ki02).
325.0	1/2$^+$	0.14 ns *3*	B(E2)↑=0.006 *1* (1967Ki02) $T_{1/2}$: from B(E2)=0.006 *1*, Iγ(325γ)/Iγ(198γ)=17/83.
422.0	3/2$^+$	≥1.4 ps	$T_{1/2}$: from 1974Er04, DSA method. B(E2)=0.017 *2* (1967Ki02), 0.023 *3* (1987Ar17).
544.9	7/2$^+$	1.5 ps *3*	B(E2)↑=0.140 *10* (1967Ki02) $T_{1/2}$: from 1974Er04, DSA method. Others: 1973Be72, 1970Va33 (upper limit). B(E2)↑: other: 0.127 *12* (1987Ar17).
616.3	5/2$^+$		B(E2)↑=0.012 *2* (1967Ki02)
623.5	1/2$^+$	7 ps *+3−2*	$T_{1/2}$: from B(E2). Other: ≥1.4 ps (1974Er04), DSA method. B(E2)=0.007 *2* (1967Ki02).
719.9	9/2$^+$	3.0 ps *8*	B(E2)↑=0.102 *8* (1967Ki02) $T_{1/2}$: average of 3.8 ps *3* (from B(E2)) and 2.1 ps *5* (1974Er04), DSA method.
928.9	9/2$^+$		B(E2)≈0.010 (1967Ki02).

γ(^{101}Ru)

ΔIγ: ±10% uncertain for strong peaks, ≈20% for others.

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$[†]	E$_f$	J$_f^\pi$	Mult.[#]	δ	α[a]	Comments
127.2	3/2$^+$	127.2 *2*	100	0.0	5/2$^+$	M1+E2	+0.157 *7*	0.168 *1*	B(M1)(W.u.)=0.01365 *13*; B(E2)(W.u.)=19.1 *17* Mult.: from α(K)exp=0.15 *2* (1973Al16) ce(K)/Iγ. δ: from $T_{1/2}$ and B(E2). Others: +0.18 *6* from A_2(127γ)(θ)=+0.114 *22* (1962Ri09), +0.17 *4* from (pol 127γ)(198γ)(θ): measured at 0° and 90° (1966Wo06).
306.8	7/2$^+$	306.8 *2*	100	0.0	5/2$^+$	M1+E2	−0.117 *+21−26*	0.0156 *1*	Mult.: from α(K)exp=0.0130 *5* (1973Al16) ce(K)/Iγ.
311.2	5/2$^+$	184.1 *1*	100	127.2	3/2$^+$	M1		0.06	

Continued on next page (footnotes at end of table)

Coulomb excitation 1967Ki02 (continued)

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

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[#]	δ	α[a]	Comments
311.2	$5/2^+$	311.1 *2*	14.8 *17*	0.0	$5/2^+$	(M1)		0.015	
325.0	$1/2^+$	197.8 *1*	100	127.2	$3/2^+$	M1(+E2)	+0.05[&] *2*	0.05	B(M1)(W.u.)=0.016 *4*; B(E2)(W.u.)=1.0 *8*
		325.0 *3*	19.5 *23*	0.0	$5/2^+$	E2		0.021	B(E2)(W.u.)=6.2 *16*
422.0	$3/2^+$	110.7 *3*	5.8 *6*	311.2	$5/2^+$				
		114.8 *10*	3.1 *4*	306.8	$7/2^+$				
		294.8 *2*	100 *5*	127.2	$3/2^+$	D(+Q)	−0.8[&] *+32−8*		
		422.0 *1*	50 *3*	0.0	$5/2^+$				
544.9	$7/2^+$	233.7 *1*	4.1 *4*	311.2	$5/2^+$	M1,(E2)		0.03	
		238.1 *1*	4.8 *5*	306.8	$7/2^+$	M1,(E2)		0.03	
		544.9 *1*	100 *5*	0.0	$5/2^+$	M1+E2	−0.98 *10*		B(M1)(W.u.)=0.042 *10*; B(E2)(W.u.)=1.3×10^2 *3*
616.3	$5/2^+$	489.1 *2*	100	127.2	$3/2^+$				
		616.3 *3*	98 *11*	0.0	$5/2^+$				
623.5	$1/2^+$	496.4 *2*	100	127.2	$3/2^+$				
		623.2 *6*	36 *5*	0.0	$5/2^+$				
719.9	$9/2^+$	174.7 *2*	9.7 *5*	544.9	$7/2^+$				
		408.4 *3*	3.3 *3*	311.2	$5/2^+$				
		413.1 *2*	7.4 *7*	306.8	$7/2^+$				
		720.1 *2*	100 *5*	0.0	$5/2^+$				
928.9	$9/2^+$	383.8[@]	32.6 *7*	544.9	$7/2^+$				
		617.3[@]	48 *3*	311.2	$5/2^+$				
		621.9[@]	67.4 *23*	306.8	$7/2^+$				
		928.9[@] *15*	100 *12*	0.0	$5/2^+$				

[†] % photon branching from each level given is derived from Iγ at Eα=7.03, 6.86, 6.25, 5.66 MeV (semi).
[‡] ±10% uncertain for strong peaks, ≈20% for others.
[#] From adopted gammas.
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[&] From exp angular distributions; see 1977Kr13 compilation.
[a] 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.

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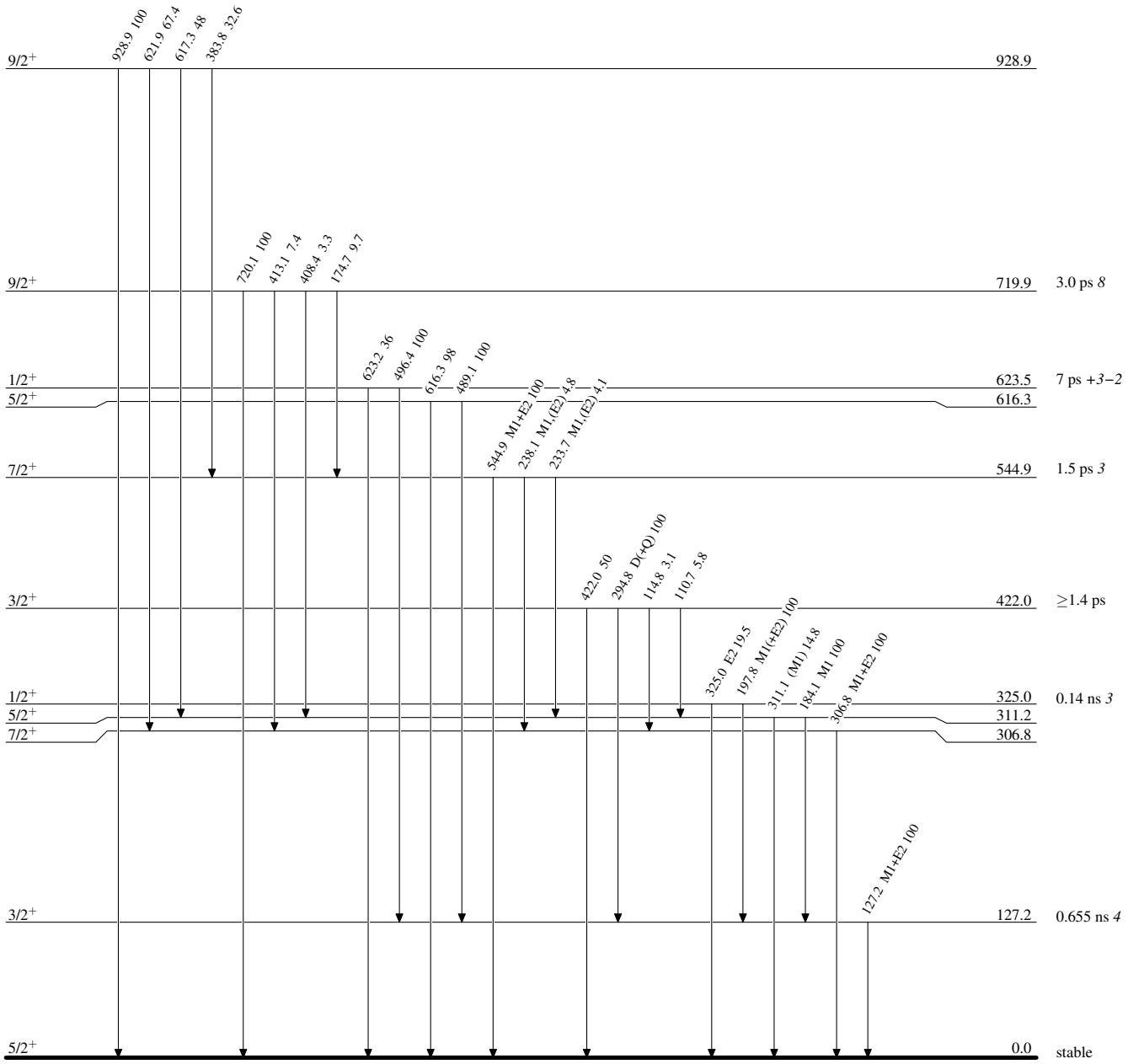
Level Scheme

Intensities: % photon branching from each level



$^{101}_{44}Ru_{57}$