Coulomb excitation **1967Ro03,1994Sp05,1985Si08**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 135, 193 (2016)	31-May-2016

1967Ro03: ($\alpha,\alpha'\gamma$) E=2.5-7 MeV. (^{16}O,^{16}Oγ) E=36 MeV. Enriched target. $\gamma(\theta)$ measured at 0° and 90°. See also 1965Ro09, 1963Ro02 and 1962Ro09 from the same group.
1994Sp05: ^{28}Si(^{79}Br,^{79}Br′) E=214 MeV. Measured $\gamma(\theta$,H), (particle)γ coin, lifetimes by DSAM, deduced g factors.
1985Si08: (p,p′γ) E=2.5 MeV. Natural target. Measured yield of γ rays.
1974Co11: ($\alpha,\alpha'\gamma$) E=5.6-7.0 MeV. Natural target. Delayed γ-ray spectrum obtained to reveal population of the 207-keV isomer.
Others:
1974Co11: ($\alpha,\alpha'\gamma$) E=6.8 MeV.
1969Sh12: ($\alpha,\alpha'\gamma$) E=3.5 MeV.
1968An12: (^{12}C,^{12}C′γ) E=33.6 MeV. Natural target.
1961Va25: (p,p′γ) E=4.1 MeV.
1957Wo32: ($\alpha,\alpha'\gamma$) E=2-4.2 MeV.
1954He02: ($\alpha,\alpha'\gamma$) E=3.0 MeV.

^{79}Br Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	Comments
0.0	$3/2^-$		
207.1 *4*	$9/2^+$	4.85 s *4*	%IT=100 $T_{1/2}$: from Adopted Levels. Level seen by 1974Co11 in delayed γ-spectrum.
217.10 *24*	$5/2^-$	47 ps *4*	g=0.4 *1* (1994Sp05) B(E2)=0.0395 *33* (1967Ro03), 0.0260 *22* (1985Si08),<0.02 (1968An12), 0.023 *5* (1957Wo32). Weighted average=0.029 *5*. $T_{1/2}$: B(E2)=0.0395 *33* (1967Ro03) and δ(217γ) from $\gamma(\theta)$ imply $T_{1/2}$=34 ps *23* (52 ps if B(E2)=0.0260 *22* (1985Si08)) for δ=0.088 *30* and 4.3 ns for δ=4.9. The former $T_{1/2}$ is in agreement with adopted $T_{1/2}$=51 ps *12* (1988Sc13).
261.4 *3*	$3/2^-$		B(E2)=0.0070 *6* (1967Ro03), 0.0046 *15* (1968An12), 0.0040 *4* (1985Si08). Weighted average=0.0049 *10*.
306.4 *3*	$1/2^-$,$3/2^-$	4.23 ps *7*	B(E2)=0.0211 *18* (1967Ro03), 0.011 *2* (1968An12), 0.0115 *20* (1985Si08). Weighted average=0.015 *3*.
397.3 *3*	$1/2^-$,$3/2^-$		B(E2)=0.0033 *5* (1967Ro03), 0.0032 *3* (1985Si08),<0.002 (1968An12). Weighted average=0.0032 *4*.
522.8 *3*	$5/2^-$	1.91 ps *6*	g=1.1 *3* (1994Sp05) B(E2)=0.095 *9* (1967Ro03), 0.096 *19* (1968An12), 0.088 *8* (1985Si08). Weighted average=0.092 *8*. $T_{1/2}$: 0.9 ps *4* deduced from B(E2) and δ(523γ)=0.21 *5*. This agrees with 1.3 ps *3* from (γ,γ'). Other possible δ(423)=−12 *+5−23* gives $T_{1/2}$=20 ps *2*.
605.8 *3*	$3/2^-$	1.87 ps *7*	B(E2)=0.0152 *23* (1967Ro03), 0.018 *5* (1968An12), 0.017 *5* (1985Si08). Weighted average=0.0159 *23*.
761.2 *3*	$7/2^-$	1.50 ps *4*	g=0.54 *8* (1994Sp05) B(E2)=0.128 *22* (1967Ro03), 0.12 *3* (1968An12), 0.114 *10* (1985Si08). Weighted average=0.117 *10*. $T_{1/2}$: 1.2 ps *2* (from B(E2) value and J$^\pi$=$7/2^-$).
793	($3/2^-$,5/2)	2.08 ps *14*	E(level): from 1994Sp05.
831.6 *4*	$1/2^-$,$3/2^-$		B(E2)<0.0060 (1967Ro03).
954	($7/2^-$)	1.11 ps *7*	E(level): from 1994Sp05.

† From least-squares fit to Eγ data.
‡ From Adopted Levels.
# From DSAM (1994Sp05).

Coulomb excitation 1967Ro03,1994Sp05,1985Si08 (continued)

$\gamma(^{79}Br)$

E_i(level)	J_i^π	E_γ[†]	I_γ[#]	E_f	J_f^π	Mult.[‡]	δ	α[@]	Comments
207.1	$9/2^+$	207.2 *4*	100	0.0	$3/2^-$	E3		0.313 *6*	α(K)=0.265 *5*; α(L)=0.0413 *7*; α(M)=0.00657 *11* α(N)=0.000544 *9*
217.10	$5/2^-$	217.3 *3*	100	0.0	$3/2^-$	M1+E2	+0.08 *3*	0.0149 *3*	A_2=−0.053 *12*; A_4=−0.001 *2* (1994Sp05) A_2=−0.039 *11* (1967Ro03) α(K)=0.0132 *3*; α(L)=0.00143 *3*; α(M)=0.000228 *5* α(N)=2.12×10^{-5} *5* δ: from $\gamma(\theta)$ (1994Sp05). Others: +0.088 *30* or −4.9 (1967Ro03). B(E2)=0.0395 *33* (1967Ro03) and $T_{1/2}$=51 ps *12* give δ=0.107 *14*. B(E2)=0.0260 *22* (1985Si08) gives δ=0.086 *11*.
261.4	$3/2^-$	43 *3*	0.7 *2*	217.10	$5/2^-$	M1		1.2 *3*	α(K)=1.1 *3*; α(L)=0.12 *3*; α(M)=0.020 *5* α(N)=0.0018 *5*
		261.5 *3*	99.3	0.0	$3/2^-$				
306.4	$1/2^-$,$3/2^-$	306.4 *3*	100	0.0	$3/2^-$	M1+E2	0.11 *2*	0.00630 *10*	A_2=+0.029 *15*; A_4=−0.013 *15* (1994Sp05) α(K)=0.00560 *9*; α(L)=0.000602 *10*; α(M)=9.57×10^{-5} *15* α(N)=8.93×10^{-6} *14* δ: average of values from $T_{1/2}$ in (γ,γ') and B(E2) values from 1967Ro03 and 1985Si08. Additional information 1.
397.3	$1/2^-$,$3/2^-$	136.1 *11*	8 *3*	261.4	$3/2^-$				
		181		217.10	$5/2^-$				Seen by 1968An12 only.
		397.2 *3*	92	0.0	$3/2^-$				
522.8	$5/2^-$	307[&]	10 *1*	217.10	$5/2^-$				
		522.8 *3*	90	0.0	$3/2^-$	M1+E2	+0.26 *3*	0.00179	A_2=+0.036 *4*; A_4=−0.021 *4* (1994Sp05) A_2=+0.005 *15* (1967Ro03) α(K)=0.001596 *25*; α(L)=0.000170 *3*; α(M)=2.69×10^{-5} *5* α(N)=2.52×10^{-6} *4* δ: from $\gamma(\theta)$ In 1994Sp05. Other: δ=+0.21 *5* or −12 *+5−23* from $\gamma(\theta)$ In 1967Ro03. δ=12 *+5−23* gives $T_{1/2}$=20 ps *2* which disagrees with 1.3 ps *4* from (γ,γ').
605.8	$3/2^-$	208.4 *6*	12 *3*	397.3	$1/2^-$,$3/2^-$				
		299.4 *7*	13 *2*	306.4	$1/2^-$,$3/2^-$				
		345[&]		261.4	$3/2^-$				Seen by 1968An12 only.
		389.1 *6*	13 *2*	217.10	$5/2^-$				
		605.4 *5*	62 *4*	0.0	$3/2^-$				A_2=−0.018 *42*; A_4=+0.05 *5*

Continued on next page (footnotes at end of table)

Coulomb excitation **1967Ro03,1994Sp05,1985Si08 (continued)**

$\gamma(^{79}Br)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ #	E_f	J_f^π	Comments
						(1994Sp05) Additional information 2.
761.2	$7/2^-$	238.6 *4*	14 *4*	522.8	$5/2^-$	I_γ: 7 *1* (1985Si08).
		544.0 *4*	52 *4*	217.10	$5/2^-$	A_2=+0.059 *2*; A_4=+0.13 *3* (1994Sp05) δ: ≥100 from $\gamma(\theta)$. I_γ: 58 *3* (1985Si08).
		555	3.6 *4*	207.1	$9/2^+$	γ seen by 1974Co11 only.
		760.5 *8*	31 *3*	0.0	$3/2^-$	A_2=+0.352 *7*; A_4=−0.067 *10* (1994Sp05) I_γ: 35 *2* (1985Si08). δ: infinity from $\gamma(\theta)$. Additional information 3.
793	$(3/2^-,5/2)$	793		0.0	$3/2^-$	
954	$(7/2^-)$	954		0.0	$3/2^-$	

† From 1967Ro03, unless otherwise stated.
‡ From Adopted Gammas, unless otherwise stated.
# Photon branching ratios from 1967Ro03, unless otherwise stated.
@ From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr.
& Placement of transition in the level scheme is uncertain.

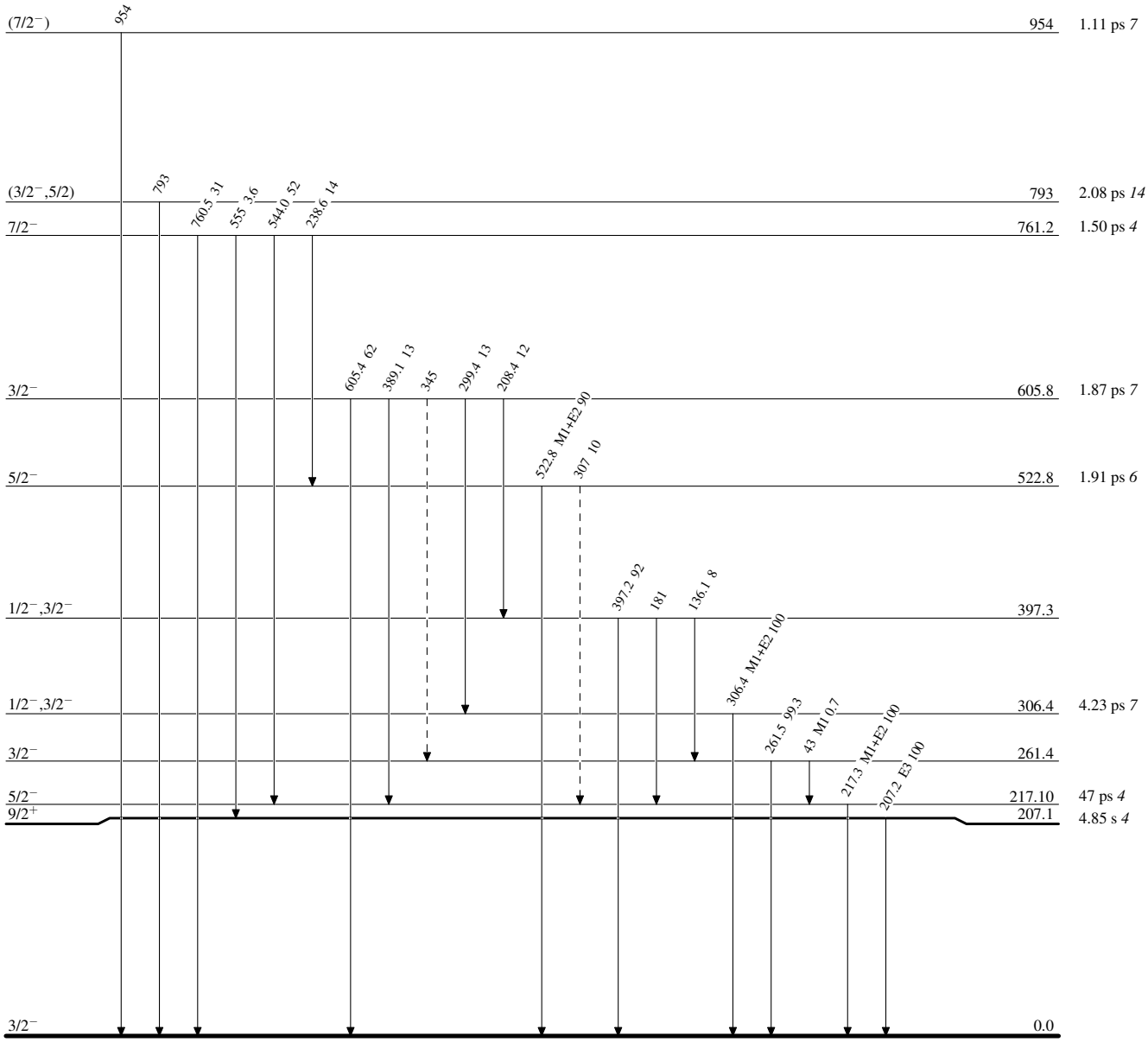
Coulomb excitation 1967Ro03,1994Sp05,1985Si08

Legend

Level Scheme

Intensities: % photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{79}_{35}Br_{44}$