Coulomb excitation 1976Ga10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

1976Ga10: (^{16}O,^{16}O′) E=38-48 MeV at ANU. (α,α') E=6-11 MeV. γ, $\gamma\gamma$, ^{16}O-$\gamma(\theta)$ measurements. Subsequent analysis given by 1976Le15.

Others:
1976SiZW: (^{35}Cl,^{35}Cl′) E=145 MeV; measured Eγ, Iγ, $\gamma(\theta)$, (^{35}Cl)γ-coin at the Chalk River tandem accelerator facility.
1970Ga20: (^{14}C,^{14}C′),E=46.1 MeV; measured Eγ, Iγ.
1967Bo42: (^{12}C,^{12}C′),E=41.6 MeV; measured Eγ, Iγ.
1963Al30: (^{14}N,^{14}N′),E=52 MeV; measured Eγ, Iγ, ^{14}N-γ coin.
1960Na13: (α,α') E=14-20 MeV.

^{149}Sm Levels

850 level reported by 1967Bo42 and 1963Al30 has been omitted for lack of confirmation by 1976Ga10.
B(E2)(↑) values are relative to B(E2)(↑) for 664 level.

E(level)[†]	J$^\pi$[@]	T$_{1/2}$[‡]	Comments
0.0	7/2$^-$		
22.5	5/2$^-$		
277.4 *2*	5/2$^-$	<1.3 ns	B(E2)=0.0006 *6*. Other: 0.0047 (1967Bo42). Level probably populated indirectly. T$_{1/2}$: ≤0.2 ns from the Adopted Levels.
286.0 *2*	9/2$^-$	<0.7 ns	B(E2)=0.0010 *10*. Other: 0.0099 (1967Bo42). Level probably populated indirectly. T$_{1/2}$: 0.22 ns *4* from the Adopted Levels.
350.0 *2*	3/2$^-$	9.5 ps *3*	B(E2)=0.043 *1*. Other: 0.029 (1967Bo42).
528.3 *2*	3/2$^-$	24 ps *3*	B(E2)=0.013 *1*. Other: 0.02 (1967Bo42).
558.2 *2*	5/2$^-$	24 ps *8*	B(E2)=0.009 *1*. Others: 0.020 *8* (1970Ga20), <0.02 (1967Bo42).
590.8 *2*	9/2$^-$	3.0 ps *7*	B(E2)=0.174 *2*. Others: 0.11 (1967Bo42), 0.12 (1963Al30).
636.7 *2*	7/2$^-$	<1.5 ps	B(E2)=0.022 *2*. Others: 0.010 *4* (1970Ga20), 0.11 (1963Al30). T$_{1/2}$: from B(E2)=0.022, adopted branching ratio and δ for 637γ.
664.0 *2*	11/2$^-$	2.7 ps *3*	B(E2)=0.223 *19* (absolute measurement). Others: 0.19 (1967Bo42), 0.21 (1963Al30), 0.21 (1960Na13).
713?			
747[#] *1*	13/2$^-$		
789[#] *1*	11/2$^+$		
834[#] *1*			
878[#] *1*	13/2$^+$		

[†] From least-squares fit to Eγ data, assuming 0.2 keV uncertainty for Eγ value, when not stated.
[‡] From B(E2) values, adopted branching ratios and δ.
[#] From 1976SiZW only. Probably excited through E3 or multiple excitation.
[@] From the Adopted Levels.

Coulomb excitation 1976Ga10 (continued)

$\gamma(^{149}Sm)$

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	Comments
22.5		22.5	$5/2^-$	0.0	$7/2^-$			E_γ: rounded value from the Adopted dataset.
73.0[@]		350.0	$3/2^-$	277.4	$5/2^-$			
89[#] *1*		878	$13/2^+$	789	$11/2^+$			
125[#] *1*		789	$11/2^+$	664.0	$11/2^-$			
178.6[@]		528.3	$3/2^-$	350.0	$3/2^-$			
198[#] *1*		789	$11/2^+$	590.8	$9/2^-$			
208.2[&] *2*		558.2	$5/2^-$	350.0	$3/2^-$			
214[#] *1*		878	$13/2^+$	664.0	$11/2^-$			
251.5[@]		528.3	$3/2^-$	277.4	$5/2^-$			
254.6[@]		277.4	$5/2^-$	22.5	$5/2^-$			
277.4	2.7 *5*	277.4	$5/2^-$	0.0	$7/2^-$			
281.1	1.1 *5*	558.2	$5/2^-$	277.4	$5/2^-$			
286.0	9.0 *6*	286.0	$9/2^-$	0.0	$7/2^-$			
287[&] *1*		636.7	$7/2^-$	350.0	$3/2^-$			
304.9	2.8 *6*	590.8	$9/2^-$	286.0	$9/2^-$			
327.6	36.6 *12*	350.0	$3/2^-$	22.5	$5/2^-$	M1+E2	+0.27 *+30−45*	A_2=−0.114 *44*; A_4=−0.004 *48*
350.0	3.5 *6*	350.0	$3/2^-$	0.0	$7/2^-$			
350[&] *1*	0.4 *3*	636.7	$7/2^-$	286.0	$9/2^-$			
359.4	1.3 *3*	636.7	$7/2^-$	277.4	$5/2^-$			
378.2	3.5 *7*	664.0	$11/2^-$	286.0	$9/2^-$			
436[a]		713?		277.4	$5/2^-$			
461[#] *1*		747	$13/2^-$	286.0	$9/2^-$			
506.1[@]		528.3	$3/2^-$	22.5	$5/2^-$			
528.3	4.2 *7*	528.3	$3/2^-$	0.0	$7/2^-$			
535.9	2.1 *6*	558.2	$5/2^-$	22.5	$5/2^-$			
558.2	2.2 *7*	558.2	$5/2^-$	0.0	$7/2^-$	E2+M1	1.2 *+7−4*	Mult.,δ: from the Adopted Gammas.
568.3	18.3 *11*	590.8	$9/2^-$	22.5	$5/2^-$			A_2=−0.04 *8*; A_4=+0.29 *10*
590.8	80.8 *21*	590.8	$9/2^-$	0.0	$7/2^-$	E2+M1	−1.5 *+9−4*	A_2=−0.069 *37*; A_4=−0.32 *5*
614.0	5.0 *7*	636.7	$7/2^-$	22.5	$5/2^-$			
636.7	1.9 *6*	636.7	$7/2^-$	0.0	$7/2^-$	M1+E2	−0.30 *+16−18*	Mult.,δ: from the Adopted Gammas.
664.0	100.0 *23*	664.0	$11/2^-$	0.0	$7/2^-$	E2		A_2=+0.33 *4*; A_4=−0.060 *43*
834[#] *1*		834		0.0	$7/2^-$			

[†] From $\gamma(\theta)$ data in 1976Ga10 and RUL, unless otherwise noted.
[‡] Relative to 100 for 664γ at E(^{16}O)=44 MeV.
[#] From 1976SiZW only.
[@] Rounded values from the Adopted Gammas.
[&] From $\gamma\gamma$ only.
[a] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

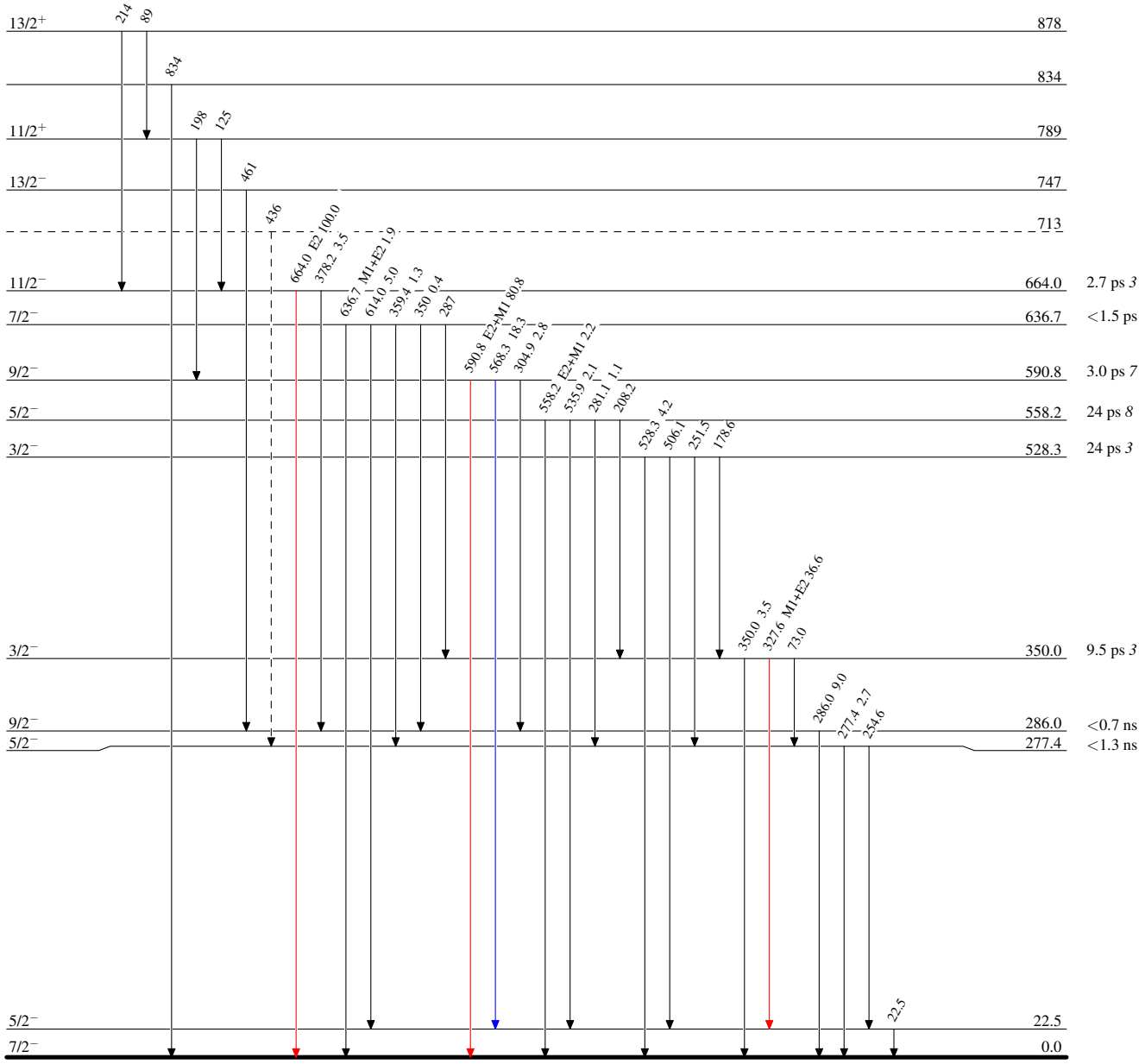
Legend

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

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

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

γ Decay (Uncertain)



$^{149}_{62}Sm_{87}$