^{88}Sr(^{6}Li,2npγ) 1976Br14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 114, 1293 (2013)	1-Sep-2013

E=34 MeV, pulsed beam. Natural target. Ge(Li), FWHM=2.5 keV to 3.0 keV. Si(Li), FWHM=180 eV. Measured γ-singles and coincidence spectra, excitation functions, ^{6}Li-γ(t), and ^{6}Li-γ(θ). Searched for isomers in a time range of 500 μs to≈20 ns using pulsed beam.

^{91}Zr Levels

E(level)[†]	Jπ[#]	$T_{1/2}$[‡]	Comments
0	5/2$^+$		
2131.1 *4*	(9/2)$^+$		
2169.9 *4*	(11/2)$^-$		
2259.5 *4*	(13/2)$^-$		
2287.5 *5*	(15/2)$^-$	≈35 ns	
2319.8 *5*	(11/2)$^-$		
2764.5 *11*	(13/2)$^-$		
2856.7 *5*	(13/2)$^+$	≤7 ns	$T_{1/2}$: limit based on observation of prompt γγ coin.
3146.5 *5*	(17/2)$^+$	≤7 ns	$T_{1/2}$: limit based on observation of prompt γγ coin.
3166.9 *6*	(21/2$^+$)	4.35 μs *14*	

[†] From least-squares fit to Eγ.
[‡] From ^{6}Li-γ(t), except as noted.
[#] From Adopted Levels.

γ(^{91}Zr)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[a]	Comments
(20.4[&] *2*)	0.31 *3*	3166.9	(21/2$^+$)	3146.5	(17/2)$^+$	[E2]	341 *14*	I_γ: calculated from intensity balance at 3147 level assuming mult(20γ)=E2.
28.0 *2*		2287.5	(15/2)$^-$	2259.5	(13/2)$^-$	(M1)	7.92 *21*	α(exp)=8.0 (1976Br14) E_γ: uncertainty given as 0.1 keV in text of 1976Br14. α(exp),Mult.: apparently deduced by authors on the basis of γγ and unenumerated Iγ data.
38.7 *2*	2.5 *14*	2169.9	(11/2)$^-$	2131.1	(9/2)$^+$	[E1]	1.75 *4*	I_γ: from I(γ+ce)=7 *4* from intensity balance of delayed transitions (1976Br14) assuming mult=E1.
60.3 *2*		2319.8	(11/2)$^-$	2259.5	(13/2)$^-$			
89.5 *2*		2259.5	(13/2)$^-$	2169.9	(11/2)$^-$			
150 *1*		2319.8	(11/2)$^-$	2169.9	(11/2)$^-$			Weak γ (1976Br14).
^{x}230[@]								
289.8 *3*	13.0 *13*	3146.5	(17/2)$^+$	2856.7	(13/2)$^+$	E2	0.0244	Mult.: A_2=+0.26 *7*, A_4=−0.26 *10* (1976Br14).
477 *1*		2764.5	(13/2)$^-$	2287.5	(15/2)$^-$			Mult.: A_2=−0.25 *16*, A_4=+0.11 *20* (1976Br14).
537 *1*	1.7 *2*	2856.7	(13/2)$^+$	2319.8	(11/2)$^-$			
570 *1*	1.30 *13*	2856.7	(13/2)$^+$	2287.5	(15/2)$^-$			
596.9 *3*	3.9 *4*	2856.7	(13/2)$^+$	2259.5	(13/2)$^-$			
725.7 *3*	6.4 *6*	2856.7	(13/2)$^+$	2131.1	(9/2)$^+$	E2		Mult.: A_2=+0.21 *8*, A_4=−0.19 *10* (1976Br14).
859.0 *3*	98[#] *10*	3146.5	(17/2)$^+$	2287.5	(15/2)$^-$			Mult.: A_2=−0.13 *3*, A_4=−0.04 *3* (1976Br14).

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^{88}Sr(^{6}Li,2npγ) 1976Br14 (continued)

$\gamma(^{91}Zr)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
879.4 *3*	4.4 *5*	3166.9	$(21/2^+)$	2287.5	$(15/2)^-$	
2131.1 *5*	16[#] *2*	2131.1	$(9/2)^+$	0	$5/2^+$	
2169.9 *5*	100[#] *10*	2169.9	$(11/2)^-$	0	$5/2^+$	Mult.: A_2=+0.44 *3*, A_4=+0.01 *3*, A_6=−0.03 *3* (1976Br14), consistent with octupole transition.

[†] Delayed intensity (following 4.35 μs isomeric decay); from 90° spectrum, if not indicated otherwise.
[‡] Based on stretched Q from $\gamma(\theta)$, not M2 from RUL (unless noted to the contrary).
[#] Based on delayed Iγ integrated over 0°, 45°, and 90°.
[@] Seen only in coincidence spectrum.
[&] Measured energy separation of 879γ and 859γ (1976Br14).
[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.
[x] γ ray not placed in level scheme.

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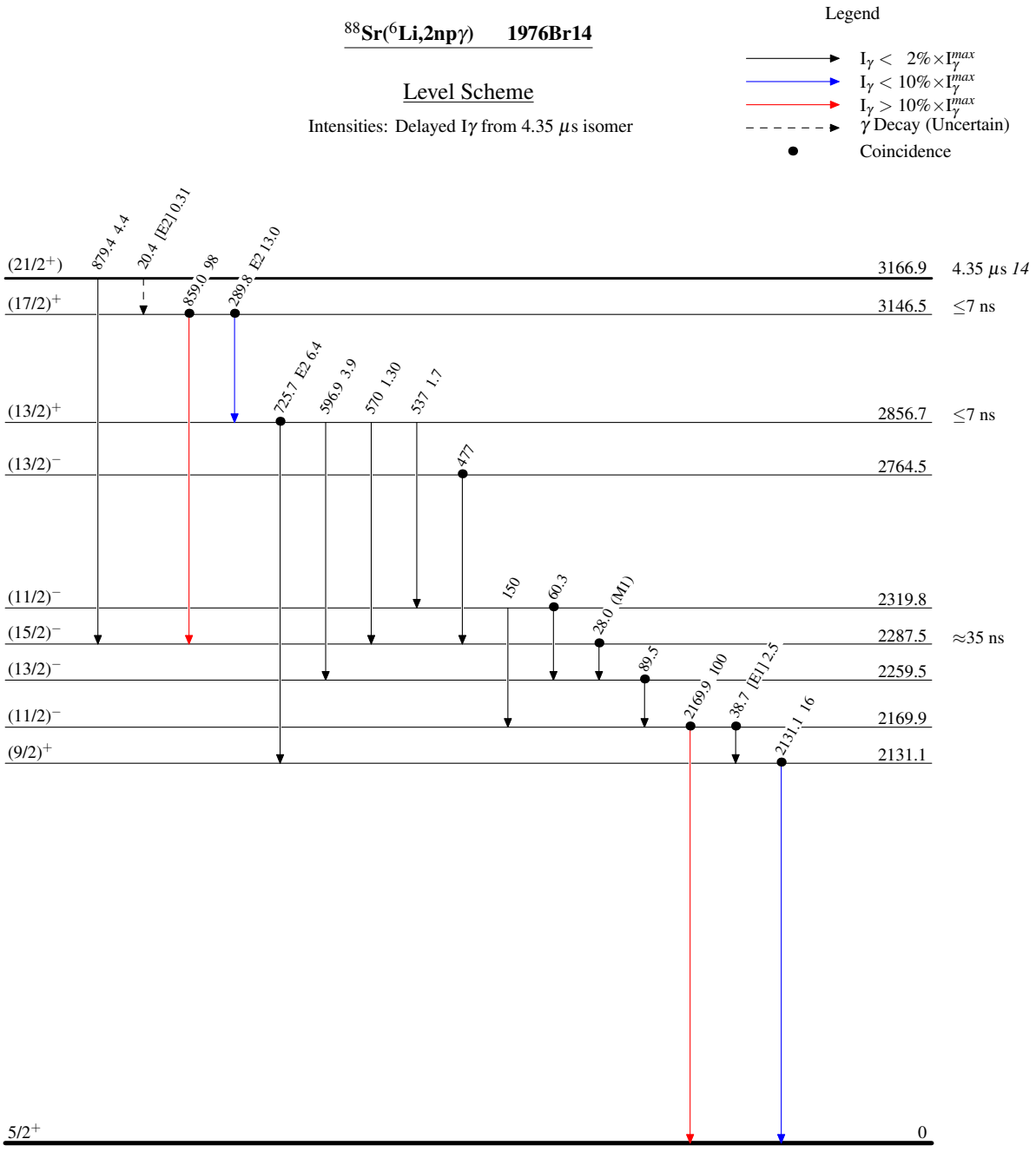
Level Scheme

Intensities: Delayed Iγ from 4.35 μs isomer



$^{91}_{40}Zr_{51}$