^{82}Se(^{9}Be,4nγ) 2014Li28

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

2014Li28: E=46 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, directional correlation of oriented nuclei (DCO) ratios using an array of nine Compton-suppressed HPGe detectors at HI-13 tandem accelerator facility of CIAE. Deduced high-spin levels, J, π, bands, multipolarity, configurations.

^{87}Sr Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
0.0[&]	9/2^{+}	Configuration=$\nu g_{9/2}^{-1}$.
1739.6[&] 4	13/2^{+}	Configuration=$\pi(p_{3/2}^{-1}p_{1/2})\otimes\nu g_{9/2}^{-1}$.
2595.3[#] 7	13/2^{-}	
2830.5[#&] 6	15/2^{-}	
3248.7[@&] 6	17/2$^{(-)}$	
3390.2[@&] 7	19/2$^{(-)}$	
3610.3[@&] 7	21/2$^{(-)}$	
3685.4 7	17/2$^{(+)}$	J$^{\pi}$: Assigned as (17/2) in Adopted Levels. Although the authors take the 1946γ as a stretched quadrupole, the large uncertainty for the DCO ratio does not exclude dipole character.
3717.2[&] 8	19/2$^{(-)}$	
4171.3[a] 7	17/2$^{(+)}$	
4440.0[&] 9	23/2$^{(-)}$	Configuration=$\pi(f_{5/2}^{-1}g_{9/2})\otimes\nu g_{9/2}^{-1}$. J$^{\pi}$: As the dipole character of the 830γ only establishes ΔJ, this is assigned as (23/2) in Adopted Levels.
4570.8[a] 7	19/2$^{(+)}$	
4671.2[a] 7	21/2$^{(+)}$	
5173.1[a] 8	23/2$^{(+)}$	
5884.7[a] 9	25/2$^{(+)}$	
6074.2 8	25/2$^{(+)}$	
6373.6[a] 9	27/2$^{(+)}$	
6674.1[a] 10	29/2$^{(+)}$	
7442.0[a] 11	31/2$^{(+)}$	

[†] From least-squares fit (by compiler) to Eγ data.
[‡] As proposed in 2014Li28 based on their DCO data, band associations and previous assignments.
[#] Configuration=$\pi(p_{3/2}^{-1}g_{9/2})\otimes\nu g_{9/2}^{-1}$.
[@] Configuration=$\pi(p_{3/2}^{-1}g_{9/2})\otimes\nu g_{9/2}^{-1}$ or $\pi(f_{5/2}^{-1}g_{9/2})\otimes\nu g_{9/2}^{-1}$.
[&] Band(A): γ cascade based on g.s.
[a] Band(B): γ cascade based on 17/2$^{(+)}$. Configuration=$\pi[(p_{3/2}f_{5/2}p_{1/2})^{-2}(g_{9/2}^{2})]\otimes\nu g_{9/2}^{-1}$.

γ(^{87}Sr)

DCO ratios correspond to 90° and 140° geometry with gates on ΔJ=2, quadrupole transitions or ΔJ=1, dipole transitions. Expected DCO values are: 1.0 for ΔJ=2, quadrupole and 0.5 for ΔJ=1, dipole when gated on ΔJ=2, quadrupole. 1.0 for ΔJ=1, dipole and 1.6 for ΔJ=2, quadrupole when gated on ΔJ=1, dipole. Gates are on ΔJ=2, quadrupole, unless otherwise stated. The authors note that the DCO ratios can not distinguish stretched quadrupole from ΔJ=0 dipole transitions, and that for these cases cross checks from from crossover or parallel transitions were used to provide additional support.

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^{82}Se(^{9}Be,4nγ) 2014Li28 (continued)

γ(^{87}Sr) (continued)

E_γ	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
100.4 *4*	11.6 *10*	4671.2	$21/2^{(+)}$	4570.8	$19/2^{(+)}$		
141.5 *4*	33.8 *18*	3390.2	$19/2^{(-)}$	3248.7	$17/2^{(-)}$		DCO=0.68 *18*
220.1 *4*	25.5 *13*	3610.3	$21/2^{(-)}$	3390.2	$19/2^{(-)}$	(D)	DCO=0.57 *7*
235.2 *7*	1.0 *3*	2830.5	$15/2^{-}$	2595.3	$13/2^{-}$	(D)	DCO=0.33 *13*
299.4 *7*	6.9 *7*	6373.6	$27/2^{(+)}$	6074.2	$25/2^{(+)}$		
300.5[‡] *4*	14.2 *6*	6674.1	$29/2^{(+)}$	6373.6	$27/2^{(+)}$	(D)	DCO=0.88 *22*
327.0 *7*	7.5 *4*	3717.2	$19/2^{(-)}$	3390.2	$19/2^{(-)}$	(D)	DCO=0.89 *19*
399.5 *7*	6.2 *7*	4570.8	$19/2^{(+)}$	4171.3	$17/2^{(+)}$	(D)	DCO=0.65 *11*
418.2 *4*	58.9 *28*	3248.7	$17/2^{(-)}$	2830.5	$15/2^{-}$	(D)	DCO=0.54 *4*
488.8 *7*	7.6 *6*	6373.6	$27/2^{(+)}$	5884.7	$25/2^{(+)}$	(D)	DCO=0.49 *8*
501.9 *4*	22.5 *14*	5173.1	$23/2^{(+)}$	4671.2	$21/2^{(+)}$	(D)	DCO=0.47 *5*
711.6 *4*	11.8 *7*	5884.7	$25/2^{(+)}$	5173.1	$23/2^{(+)}$	(D)	DCO=0.40 *7*
767.9[‡] *4*	12.0 *10*	7442.0	$31/2^{(+)}$	6674.1	$29/2^{(+)}$	(D)	DCO=0.97 *16*
829.7[‡] *7*	9.6 *10*	4440.0	$23/2^{(-)}$	3610.3	$21/2^{(-)}$	(D)	DCO=0.87 *7*
855.7 *7*	5.1 *3*	2595.3	$13/2^{-}$	1739.6	$13/2^{+}$		DCO=1.05 *44* Mult.: The authors did not assign a multipolarity based on this work, but used that from 1975Ar06 and 1981Ek01.
885.4 *7*	<0.5	4570.8	$19/2^{(+)}$	3685.4	$17/2^{(+)}$		
901.0 *4*	10.1 *9*	6074.2	$25/2^{(+)}$	5173.1	$23/2^{(+)}$	(D)	DCO=0.30 *4*
954.0 *7*	6.2 *8*	4671.2	$21/2^{(+)}$	3717.2	$19/2^{(-)}$	(D)	DCO=0.45 *18*
985.8 *7*	<0.5	4671.2	$21/2^{(+)}$	3685.4	$17/2^{(+)}$		
1060.9 *7*	2.5 *3*	4671.2	$21/2^{(+)}$	3610.3	$21/2^{(-)}$		
1090.9 *4*	67.5 *33*	2830.5	$15/2^{-}$	1739.6	$13/2^{+}$		DCO=0.44 *4* Mult.: The authors did not assign a multipolarity based on this work, but used that from 1975Ar06 and 1981Ek01.
1180.6[‡] *7*	3.9 *5*	4570.8	$19/2^{(+)}$	3390.2	$19/2^{(-)}$		DCO=1.40 *30*
1281.0[‡] *7*	2.9 *4*	4671.2	$21/2^{(+)}$	3390.2	$19/2^{(-)}$		DCO=0.91 *25*
1322.1 *7*	8.5 *5*	4570.8	$19/2^{(+)}$	3248.7	$17/2^{(-)}$	(D)	DCO=0.41 *8*
1340.8 *7*	1.1 *2*	4171.3	$17/2^{(+)}$	2830.5	$15/2^{-}$		
1562.8 *7*	2.4 *5*	5173.1	$23/2^{(+)}$	3610.3	$21/2^{(-)}$		
1634.1 *7*	1.0 *2*	6074.2	$25/2^{(+)}$	4440.0	$23/2^{(-)}$		
1739.6 *4*	100.0 *17*	1739.6	$13/2^{+}$	0.0	$9/2^{+}$		
1945.8 *7*	3.1 *4*	3685.4	$17/2^{(+)}$	1739.6	$13/2^{+}$		DCO=0.82 *29*
2431.7 *7*	1.7 *3*	4171.3	$17/2^{(+)}$	1739.6	$13/2^{+}$		

† Based on a general comment by 2014Li28, uncertainty=0.4 keV for Iγ≥10, 0.7 keV for Iγ<10.

‡ For DCO value, gate is on ΔJ=1, dipole transition.

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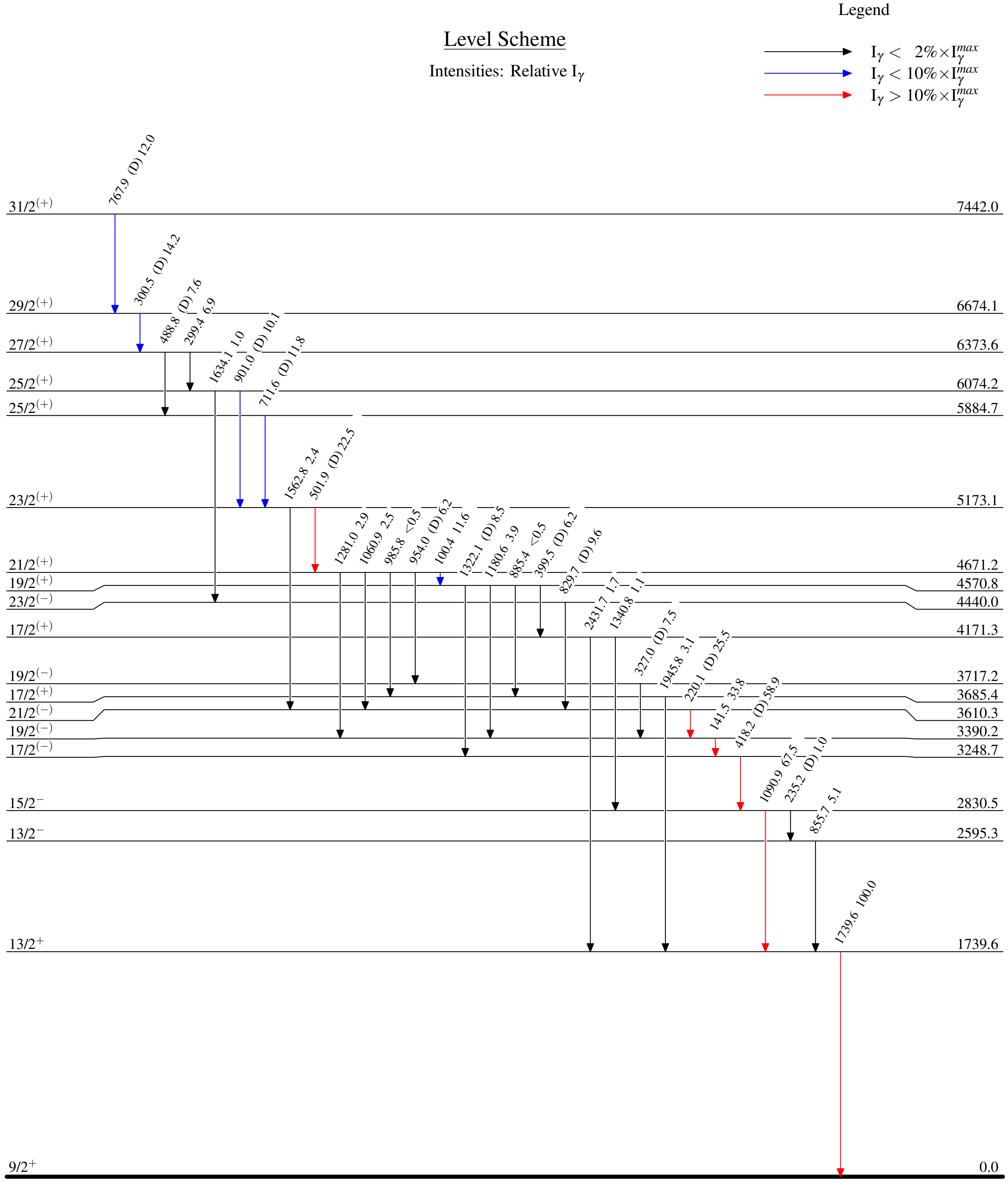
Level Scheme

Intensities: Relative I_γ



$^{87}_{38}Sr_{49}$

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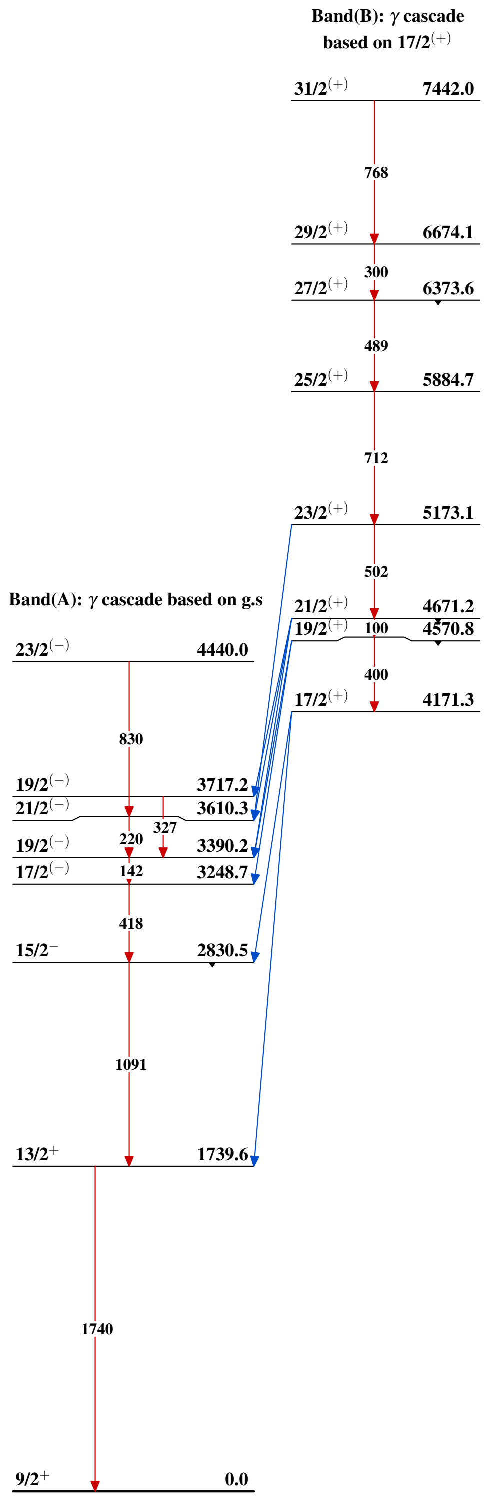

$^{87}_{38}Sr_{49}$