^{64}Ni(^{7}Li,2nγ) 1982Ba25

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 115, 1 (2014)	31-Jul-2013

1982Ba25: ^{64}Ni target bombarded by ^{Li} beam between 14-18 MeV. Measured γg coin, $\gamma(\theta)$, $T_{1/2}$ from DSAM and γ ray yield ratio. Measurements done with 18% and 13% efficiency Ge(Li)detectors (FWHM=2.2 keV at 1.3 MeV).

^{69}Ga Levels

E(level)[#]	J$^\pi$[&]	$T_{1/2}$[@]	Comments
0.0	$3/2^-$		
574.15 *3*	$5/2^-$		
1106.95 *4*	$5/2^-$	0.22[†] ps *3*	
1336.60 *3*	$7/2^-$	1.04[†] ps *+14−35*	
1487.95 *3*	$7/2^-$	≥1.73[†] ps	
1764.71 *5*	$9/2^-$	0.83[†] ps *14*	
1972.28 *4*	$9/2^{(+)}$	≥2.8 ps	
2319.33 *11*	$(5/2^+,7/2^+)$	1.04 ps *21*	J$^\pi$: 5/2,7/2 from $\gamma(\theta)$ and yield ratio.
2428.60 *21*	$5/2^-,7/2^-$	≥1.7 ps	J$^\pi$: 5/2,7/2 from $\gamma(\theta)$ and yield ratio.
2572.45 *21*	$(9/2^+)$		J$^\pi$: 5/2,9/2 from $\gamma(\theta)$ and yield ratio.
2668.18 *6*	11/2	≥1.7[†] ps	J$^\pi$: 9/2,11/2 from $\gamma(\theta)$ and yield ratio.
2717.89 *4*	$13/2^{(+)}$	≥1.4[†] ps	J$^\pi$: 13/2 uniquely from $\gamma(\theta)$ of 746γ; this is consistent with its yield function which gives J≥11/2.
2794.8 *5*	$(7/2)^-$		
3118.31 *17*	$11/2^-$	0.24 ps *5*	J$^\pi$: 11/2 from $\gamma(\theta)$ and yield ratio.
3242.37 *8*	$13/2^-$	0.5[†‡] ps *3*	J$^\pi$: 13/2 or 9/2 from $\gamma(\theta)$ of 1478γ; its yield gives J=11/2 or 13/2.
3389.23 *9*	$(15/2^+)$	1.9 ps *10*	J$^\pi$: 11/2, 13/2 or 15/2 consistent with $\gamma(\theta)$ of 671γ; its yield ratio suggests 15/2 or 17/2, however, J=13/2 cannot be ruled out.
3542.67 *9*	$11/2^{(+)}$	0.42 ps *7*	J$^\pi$: 11/2 or 15/2 from $\gamma(\theta)$ of 825γ; its yield indicates J<13/2.
3633.85 *7*	$17/2^{(+)}$	1.4 ps *7*	J$^\pi$: 17/2 or 13/2 from $\gamma(\theta)$ of 916γ; its yield indicates J≥17/2.
3722.20 *8*	(11/2,13/2)	1.6 ps *3*	J$^\pi$: 11/2, 13/2 or 15/2 from $\gamma(\theta)$ of 1004γ; J=9/2, 11/2, 13/2, from its yield ratio.
3785.97 *12*	(15/2)	1.04 ps *21*	J$^\pi$: (15/2) from $\gamma(\theta)$ and yield ratio.
4078.12 *10*	$(15/2)^-$	0.55[†] ps *10*	J$^\pi$: 11/2, 13/2 or 15/2 from $\gamma(\theta)$ of 836γ; its yield favors J=15/2 or 17/2.
4528.03 *14*	(17/2,19/2)	≥2.8 ps	J$^\pi$: 11/2 to 19/2 from $\gamma(\theta)$ of 450γ; its yield gives J>17/2.

[†] Corrected for feeding from higher levels.
[‡] $T_{1/2}$=0.55 ps 11 at E(^{7}Li)=16 MeV.
[#] From a least-squares fit to Eγ data connecting levels.
[@] From DSAM at E(^{7}Li)=18 MeV.
[&] From Adopted Levels, supporting arguments from this reaction are indicated.

$\gamma(^{69}Ga)$

E$_\gamma$	I$_\gamma$[#]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	δ[‡]	Comments
333.0 *5*	3	3722.20	(11/2,13/2)	3389.23	$(15/2^+)$			E$_\gamma$: Poor fit.
381.00 *6*	14	1487.95	$7/2^-$	1106.95	$5/2^-$	(M1)		δ: δ(E2/M1)=−0.01 *6*.
444.0 *4*	4	4078.12	$(15/2)^-$	3633.85	$17/2^{(+)}$	(D+Q)	≈0	
449.90 *10*	7	4528.03	(17/2,19/2)	4078.12	$(15/2)^-$			Mult.: (Q(+O)) with δ=−0.04 *8* if it is a 19/2 to 15/2 transition; D+Q with δ=+0.37 *8* if it is a 17/2 to 15/2 transition.
484.33 *4*	49	1972.28	$9/2^{(+)}$	1487.95	$7/2^-$	(E1)		δ: 0.00 *2*.

Continued on next page (footnotes at end of table)

^{64}Ni(^{7}Li,2nγ) 1982Ba25 (continued)

$\gamma(^{69}Ga)$ (continued)

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[‡]	Comments
574.22 *5*	156	574.15	$5/2^-$	0.0	$3/2^-$	(M1+E2)	−0.06 *1*	
635.68 *3*	71	1972.28	$9/2^{(+)}$	1336.60	$7/2^-$	(E1)		δ: −0.01 *2*.
671.34 *8*	17	3389.23	$(15/2^+)$	2717.89	$13/2^{(+)}$	M1+E2	+0.50 *4*	Mult.: Large δ rules out E1+M2.
745.61 *2*	100	2717.89	$13/2^{(+)}$	1972.28	$9/2^{(+)}$	Q		δ: −0.01 *3*.
762.48 *2*	9	1336.60	$7/2^-$	574.15	$5/2^-$	M1+E2		δ: −0.42 *+16−40* or −1.5 *5*.
822.5 *5*	5	2794.8	$(7/2)^-$	1972.28	$9/2^{(+)}$			
824.77 *8*	11	3542.67	$11/2^{(+)}$	2717.89	$13/2^{(+)}$	M1+E2	+0.35 *15*	
835.76 *7*	26	4078.12	$(15/2)^-$	3242.37	$13/2^-$	M1+E2	+0.52 *7*	
913.71 *5*	30	1487.95	$7/2^-$	574.15	$5/2^-$	(M1+E2)	−2.3 *2*	
915.95 *5*	31	3633.85	$17/2^{(+)}$	2717.89	$13/2^{(+)}$	Q		E_γ: Value of 1925.95 *5* given in authors' Table II is a misprint. δ: 0.00 *2*.
1004.30 *6*	25	3722.20	(11/2,13/2)	2717.89	$13/2^{(+)}$	D+Q		E_γ: Poor fit. δ: 0.00 *4* for a 11/2 to 13/2 transition; −1.0 2 for a 13/2 to 13/2 transition. For the second case, δ rules out E1 +M2.
1106.94 *5*	58	1106.95	$5/2^-$	0.0	$3/2^-$	(M1+E2)	+0.33 *5*	
1117.78 *10*	16	3785.97	(15/2)	2668.18	11/2	(Q)		
1146.1 *3*	7	3118.31	$11/2^-$	1972.28	$9/2^{(+)}$	D(+Q)	+0.02 *11*	
1180.04 *10*	11	2668.18	11/2	1487.95	$7/2^-$			Mult.: Q+O with δ=+0.13 *14* if it is a 11/2 to 7/2 transition; D+Q with δ=+0.62 *12* if it is a 9/2 to 7/2 transition.
1190.55 *3*	70	1764.71	$9/2^-$	574.15	$5/2^-$	(E2)		δ: −0.02 *3*.
1212.37 *10*	11	2319.33	$(5/2^+,7/2^+)$	1106.95	$5/2^-$	(E1+M2)		δ: +0.07 *7* for a 7/2 to 5/2 transition; −0.7 *3* for a 5/2 to 5/2 transition.
1235.84 *20*	8	2572.45	$(9/2^+)$	1336.60	$7/2^-$	D+Q		δ: +0.60 *25* for a 5/2 to 7/2 transition; −0.50 *15* for a 9/2 to 7/2 transition.
1321.64 *20*	8	2428.60	$5/2^-,7/2^-$	1106.95	$5/2^-$	(M1+E2)		δ: 0.35 20 for a 7/2 to 5/2 transition; 0.0 2 for a 5/2 to 5/2 transition.
1331.63 *6*	24	2668.18	11/2	1336.60	$7/2^-$			Mult.: Q+O with δ=−0.03 *6* if it is a 11/2 to 7/2 transition; D+Q with δ=+0.43 *8* if it is a 9/2 to 7/2 transition.
1336.44 *5*	125	1336.60	$7/2^-$	0.0	$3/2^-$	(E2)		δ: δ(O/Q)=0.00 *2*.
1353.55 *20*	10	3118.31	$11/2^-$	1764.71	$9/2^-$	D+Q	+0.31 *17*	
1397.81 *15*	13	1972.28	$9/2^{(+)}$	574.15	$5/2^-$	(M2)		δ: −0.06 *12*.
1477.65 *6*	26	3242.37	$13/2^-$	1764.71	$9/2^-$	(E2)		δ: +0.01 *5*.
1487.98 *4*	43	1487.95	$7/2^-$	0.0	$3/2^-$	(E2)		δ: 0.00 *3*.

[†] From $\gamma(\theta)$; parity from J^π of initial and final levels.
[‡] From $\gamma(\theta)$.
[#] Relative intensity measured at 18 MeV; uncertainties not given by the authors. Yield ratios obtained from data at 16 and 18 MeV.

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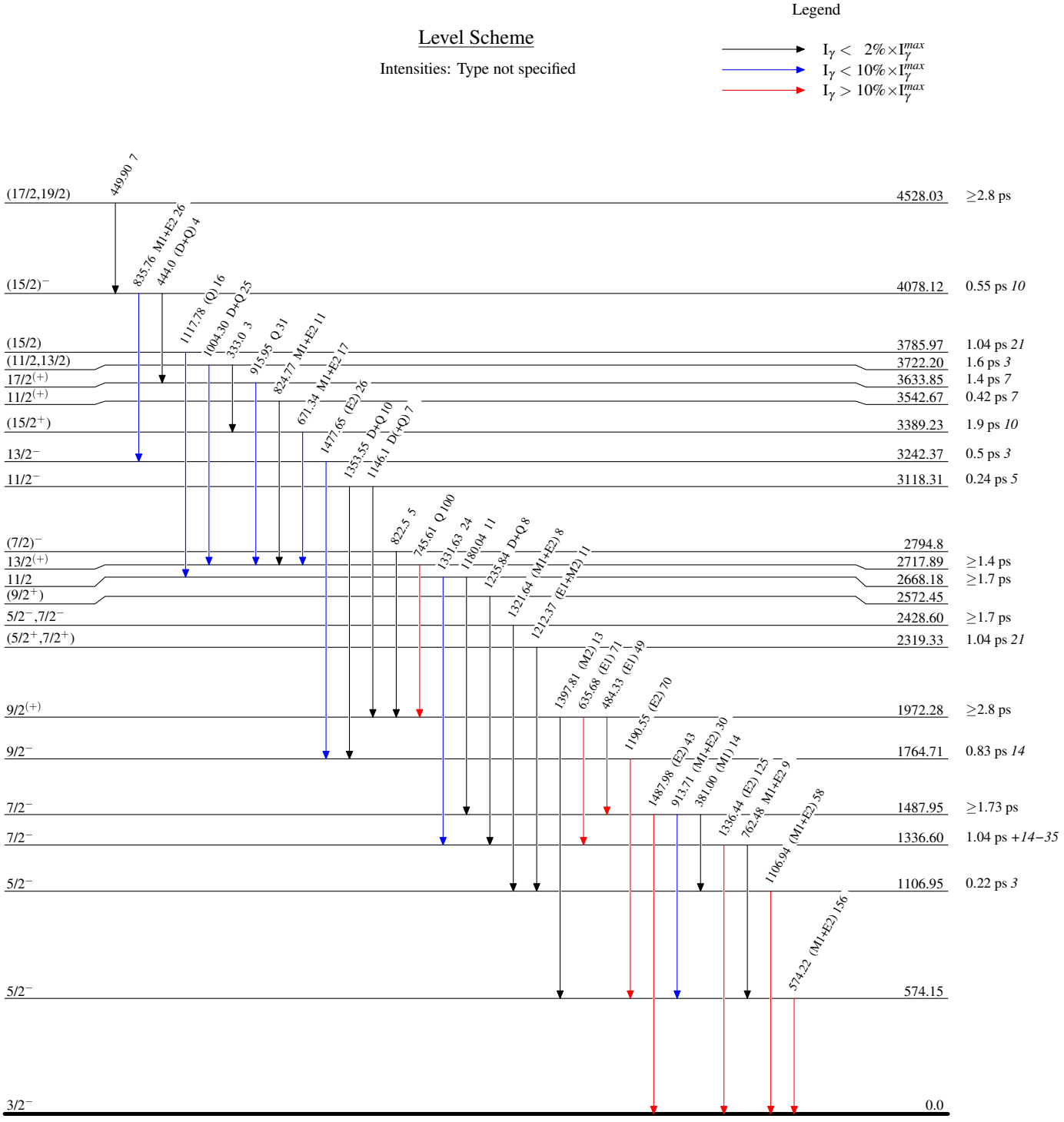
Level Scheme

Intensities: Type not specified



$^{69}_{31}Ga_{38}$