^{64}Ni(n,γ), (pol n,γ) E=thermal 1977Is01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 111, 2425 (2010)	1-Aug-2009

1977Is01: measured Eγ, Iγ; pair-spectrometer, Ge(Li).
1972Co31: measured Eγ, Iγ, $\gamma\gamma$ coincidences, $T_{1/2}$; Ge(Li)'s.
1978Ve06: (pol n,γ); measured γ-circular polarization; Ge(Li)'s.
1971Ar39: measured Eγ, Iγ; pair-spectrometer; Ge(Li).
Other: 2008He01.

^{65}Ni Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0	$5/2^-$		
63.15 *19*	$1/2^-$	>2.0 μs	J=1/2 (1978Ve06). $T_{1/2}$: from delayed $\gamma\gamma$ coincidences (1972Co31).
310.15 *18*	$3/2^-$		J=3/2 (1978Ve06).
692.18 *10*	$3/2^-$		J=3/2 (1978Ve06).
1417.7 *3*	$1/2^-$		J=1/2 (1978Ve06).
1920.0 *7*	$5/2^+$		
2146.71 *19*	$3/2^-$		J=(1/2,3/2) (1978Ve06).
2324.4 *3*			
2711.4 *3*	$3/2^+$		
3009.5 *6*	$3/2^+$		
3278.5 *5*	$3/2^+$,$5/2^+$		
3962.2 *10*	$(3/2^+,5/2^+)$		
(6098.22 *20*)	$1/2^+$		E(level): neutron separation energy from 1985Wa02.

[†] From least-squares fit to Eγ data. (The evaluators have used an uncertainty of 1 keV where Eγ uncertainties are not available).
[‡] From Adopted Levels; supporting arguments from this data set are given in comments.

γ(^{65}Ni)

E$_\gamma$[†]	I$_\gamma$[‡@]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	Comments
63.6	12	63.15	$1/2^-$	0	$5/2^-$	(E2)	Mult.: from $\alpha\approx5$ deduced from γ-ray intensity imbalance, see adopted gammas.
247.1	0.5	310.15	$3/2^-$	63.15	$1/2^-$		
310.2[#] *10*	22	310.15	$3/2^-$	0	$5/2^-$		
382.0	0.7	692.18	$3/2^-$	310.15	$3/2^-$		
629.0[#] *10*	7.0	692.18	$3/2^-$	63.15	$1/2^-$		
692.6[#] *10*	1.4	692.18	$3/2^-$	0	$5/2^-$		
726[&]	0.2	1417.7	$1/2^-$	692.18	$3/2^-$		
1107.4	3.6	1417.7	$1/2^-$	310.15	$3/2^-$		
[x]1346.0[#] *10*	2.4						I$_\gamma$: from 1971Ar39.
1418[&]	0.2	1417.7	$1/2^-$	0	$5/2^-$		
2083.8	0.6	2146.71	$3/2^-$	63.15	$1/2^-$		
2146.7 *5*	0.62 *8*	2146.71	$3/2^-$	0	$5/2^-$		I$_\gamma$: 0.3 (1972Co31).
2401.5 *6*	0.58 *9*	2711.4	$3/2^+$	310.15	$3/2^-$		
2647.9 *8*	0.22 *4*	2711.4	$3/2^+$	63.15	$1/2^-$		
[x]2810.4 *13*	0.07 *2*						
2819.7 *5*	0.19 *3*	(6098.22)	$1/2^+$	3278.5	$3/2^+$,$5/2^+$		
3088.6 *6*	0.26 *4*	(6098.22)	$1/2^+$	3009.5	$3/2^+$		
[x]3099.8 *13*	0.07 *3*						

Continued on next page (footnotes at end of table)

^{64}Ni(n,γ), (pol n,γ) E=thermal 1977Is01 (continued)

γ(^{65}Ni) (continued)

E_γ [†]	I_γ [‡@]	E_i(level)	J_i^π	E_f	J_f^π	Comments
[x]3219.3 *18*	0.11 *4*					
3386.7 *3*	0.83 *7*	(6098.22)	1/2$^+$	2711.4	3/2$^+$	
3651.0 *13*	0.08 *2*	3962.2	(3/2$^+$,5/2$^+$)	310.15	3/2$^-$	
3773.7 *3*	0.32 *3*	(6098.22)	1/2$^+$	2324.4		
[x]3852.8 *10*	0.10 *2*					
3951.4 *2*	1.13 *7*	(6098.22)	1/2$^+$	2146.71	3/2$^-$	Circular polarization R=−1.1 *10* (1978Ve06).
3963.1 *13*	0.08 *2*	3962.2	(3/2$^+$,5/2$^+$)	0	5/2$^-$	
4178.1 *7*	0.12 *2*	(6098.22)	1/2$^+$	1920.0	5/2$^+$	
4680.3 *3*	3.81 *21*	(6098.22)	1/2$^+$	1417.7	1/2$^-$	Circular polarization R=1.4 *4* (1978Ve06).
[x]4730.2 *19*	0.06 *2*					
5405.8 *1*	8.9 *5*	(6098.22)	1/2$^+$	692.18	3/2$^-$	Circular polarization R=−0.53 *19* (1978Ve06).
[x]5419.9 *17*	0.14 *5*					
[x]5752.7 *23*	0.08 *3*					
5787.8 *2*	17.7 *9*	(6098.22)	1/2$^+$	310.15	3/2$^-$	Circular polarization R=−0.64 *11* (1978Ve06).
6034.8 *2*	67 *4*	(6098.22)	1/2$^+$	63.15	1/2$^-$	Circular polarization R=1.00 *5* (value used in calibration, 1978Ve06).

[†] Values with uncertainties are from 1977Is01, except as noted. The evaluators have quadratically enhanced the uncertainties of 1977Is01 by 0.2 keV to allow for possible systematic errors. Values without uncertainties are from 1972Co31.

[‡] Photons per 100 captures from 1977Is01, except for values without uncertainties which are from 1972Co31 renormalized to Iγ(6035) from 1977Is01.

[#] From 1971Ar39.

[@] Intensity per 100 neutron captures.

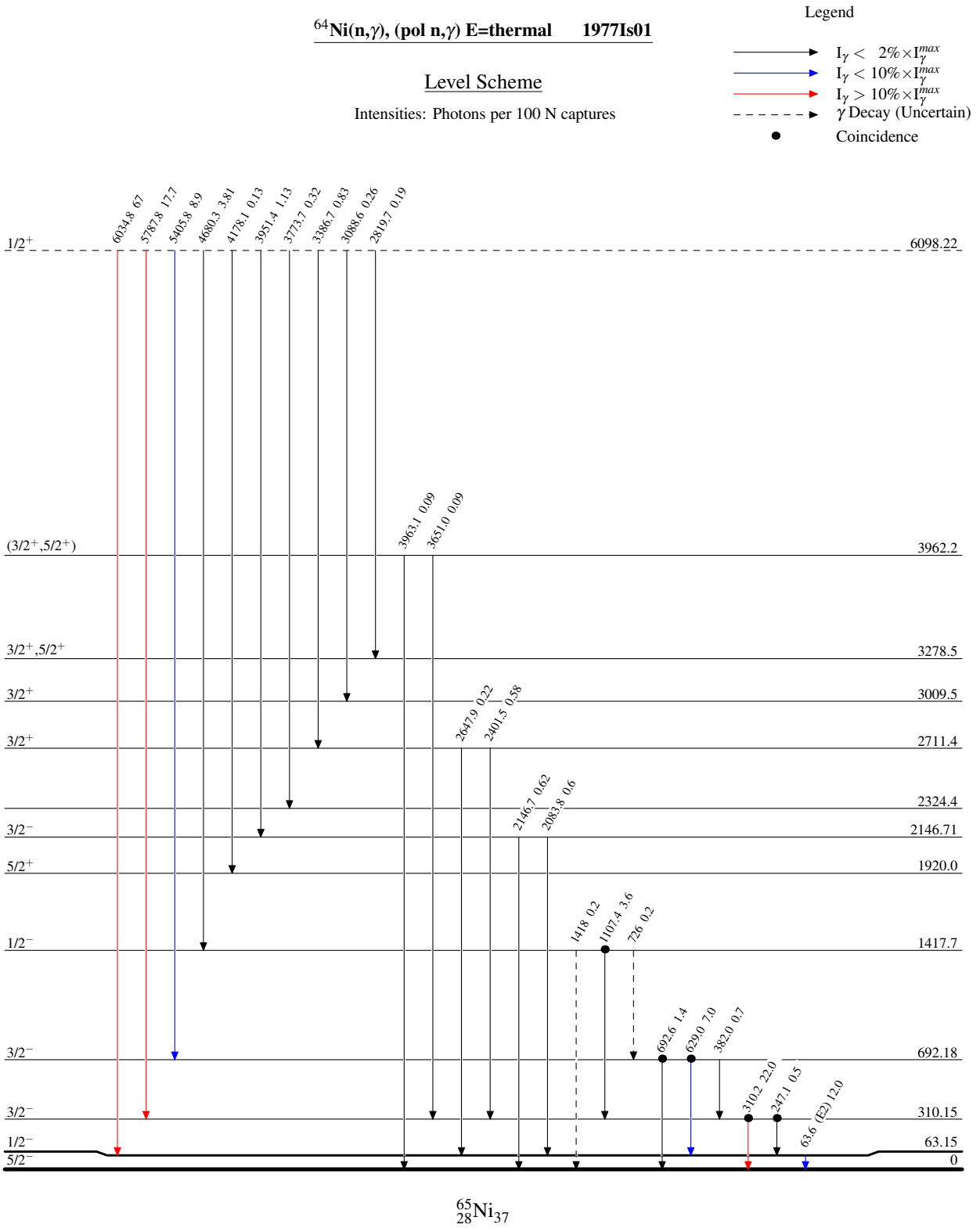
[&] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

^{64}Ni(n,γ), (pol n,γ) E=thermal 1977Is01

Level Scheme

Intensities: Photons per 100 N captures



$^{65}_{28}Ni_{37}$