^{58}Ni(^{40}Ca,3p2nγ)   **1995Ro06**

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	Coral M. Baglin	NDS 112, 1163 (2011)	15-Dec-2010

E(^{40}Ca)=187 MeV; 99.7% ^{58}Ni target, Ge detector array, particle multiplicity filter; measured Eγ, Iγ, particle-γ coin, $\gamma\gamma$ coin.

^{93}Rh Levels

The level scheme is essentially that of 1995Ro06. The statistical accuracy of the data in 1995Ro06 was inadequate for the extraction of DCO ratios, so J$^{\pi}$ values are based on systematics and are, therefore, very tentative.

E(level)[†]	J$^{\pi}$[‡]	E(level)[†]	J$^{\pi}$[‡]	E(level)[†]	J$^{\pi}$[‡]
0.0[a]	9/2$^+$	4087.6[b]	(27/2$^+$)	5445[&c]	
852.5[@a]	13/2$^+$	4250.4[b]	(29/2$^+$)	5621[b]	(37/2$^+$)
1718.4[a]	17/2$^+$	4547.6[b]	(31/2$^+$)	5692[c]	
2051.6[a]	21/2$^+$	4609.6[@c]	(27/2$^-$,29/2$^-$)	5825[d]	
2594.4[a]	23/2$^+$	4706.1[b]	(33/2$^+$)	6387[c]	(35/2 to 41/2)$^{(-)}$
2890.0[a]	25/2$^+$	4747.6[c]	(29/2$^-$,31/2$^-$)	6922[d]	(41/2$^+$)
3541.8[b]	(25/2$^+$)	5157[#b]	(35/2$^+$)		

[†] From least-squares fit to Eγ, allowing equal weights for all gammas.

[‡] Authors′ values, based on systematics. The π=+ levels with J≤25/2 follow systematically the trend set by levels in ^{89}Nb and ^{91}Tc.

[#] An alternative value of 5169 is possible because the order of the 451γ-463γ cascade could not Be established by 1995Ro06.

[@] 1995Ro06 show a level at 866, but note that E is uncertain because the transition intensities for the γ cascade through the level were not measured with sufficient accuracy to firmly establish the 866γ-853γ cascade order. In εp decay, the 853γ is clearly the stronger transition, so the evaluator has reversed the order of the transitions shown by 1995Ro06.

[&] 1995Ro06 show a level at 4994, but note that E is uncertain because the transition intensities for the γ cascade through the level were not measured with sufficient accuracy to firmly establish the 247γ-698γ cascade order. In εp decay, the 698γ is clearly the stronger transition, so the evaluator has reversed the order of the transitions shown by 1995Ro06.

[a] Band(A): possible π=+, seniority=3 states. By analogy with shell-model calculations for ^{91}Tc.

[b] Band(B): possible π=+, seniority=5 states. By analogy with shell-model calculations for ^{91}Tc.

[c] Band(C): member of possible π=− sequence. π based on absence of transitions from higher members to π=(+) sequence of levels.

[d] Band(D): possible π=+, seniority=7 states. By analogy with shell-model calculations for ^{91}Tc.

γ(^{93}Rh)

Eγ[†]	Iγ	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$
138.0	17[‡] 4	4747.6	(29/2$^-$,31/2$^-$)	4609.6	(27/2$^-$,29/2$^-$)
158.5	19[‡] 3	4706.1	(33/2$^+$)	4547.6	(31/2$^+$)
204.8	4[‡] 1	5825		5621	(37/2$^+$)
246.7	12 2	5692		5445	
295.3	39 4	2890.0	25/2$^+$	2594.4	23/2$^+$
297.2	15 4	4547.6	(31/2$^+$)	4250.4	(29/2$^+$)
333.2	80 5	2051.6	21/2$^+$	1718.4	17/2$^+$
451.1	14 2	5157	(35/2$^+$)	4706.1	(33/2$^+$)
460.0	12 3	4547.6	(31/2$^+$)	4087.6	(27/2$^+$)
463.5	14[‡] 3	5621	(37/2$^+$)	5157	(35/2$^+$)
497.2	5[‡] 2	4747.6	(29/2$^-$,31/2$^-$)	4250.4	(29/2$^+$)

Continued on next page (footnotes at end of table)

^{58}Ni(^{40}Ca,3p2nγ)   **1995Ro06** (continued)

γ(^{93}Rh) (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π
522.1	24[‡] 6	4609.6	$(27/2^-,29/2^-)$	4087.6	$(27/2^+)$
542.8	70[‡] 6	2594.4	$23/2^+$	2051.6	$21/2^+$
545.5	23 6	4087.6	$(27/2^+)$	3541.8	$(25/2^+)$
651.6	8[‡] 4	3541.8	$(25/2^+)$	2890.0	$25/2^+$
694.7	5[‡] 2	6387	$(35/2 \text{ to } 41/2)^{(-)}$	5692	
697.8	10 4	5445		4747.6	$(29/2^-,31/2^-)$
852.5	91[‡] 9	852.5	$13/2^+$	0.0	$9/2^+$
865.9	100[‡] 5	1718.4	$17/2^+$	852.5	$13/2^+$
947.4	15 4	3541.8	$(25/2^+)$	2594.4	$23/2^+$
1301.7	9 3	6922	$(41/2^+)$	5621	$(37/2^+)$
1360.4	18 3	4250.4	$(29/2^+)$	2890.0	$25/2^+$
1493.4	15 4	4087.6	$(27/2^+)$	2594.4	$23/2^+$

[†] Uncertainties unstated by authors.
[‡] Corrected for contamination from nearby nuclide(s).
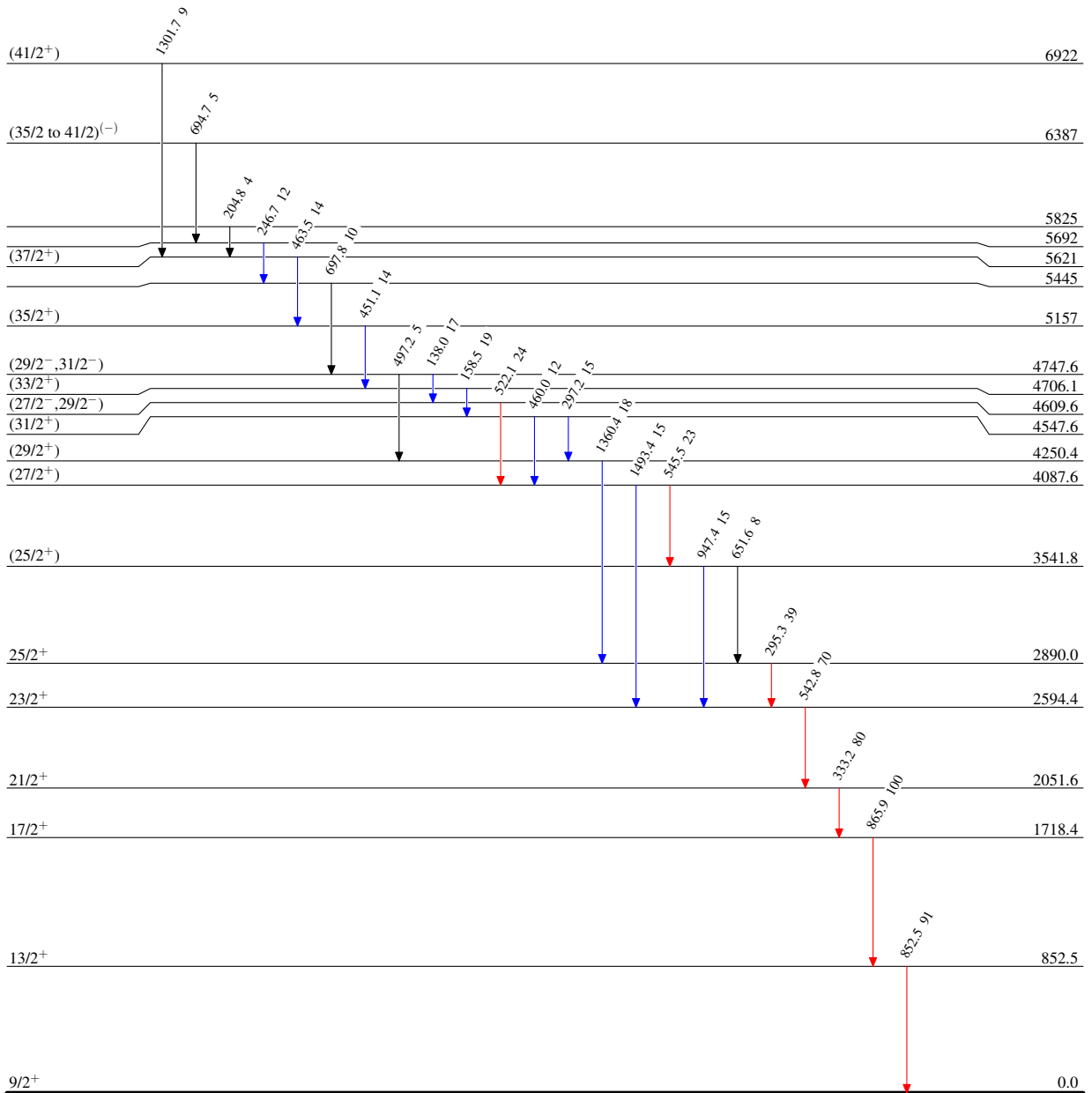
^{58}Ni(^{40}Ca,3p2nγ)　　1995Ro06

Level Scheme

Intensities: Relative I$_\gamma$

Legend

→ I$_\gamma$ < 2%×I$_\gamma^{max}$
→ I$_\gamma$ < 10%×I$_\gamma^{max}$
→ I$_\gamma$ > 10%×I$_\gamma^{max}$

$^{93}_{45}$Rh$_{48}$

^{58}Ni(^{40}Ca,3p2nγ)   1995Ro06

Band(D): Possible π=+, seniority=7 states

(41/2$^+$)   6922

Band(C): Member of possible π=− sequence

(35/2 to 41/2)$^{(-)}$ 6387

5825

Band(B): Possible π=+, seniority=5 states

695

(37/2$^+$)   5621

5692

247

5445

464

(35/2$^+$)   5157

451

698

(33/2$^+$)   4706.1

(29/2$^-$,31/2$^-$)   4747.6

(31/2$^+$)   158   4547.6

(27/2$^-$,29/2$^-$)   138   4609.6

297

(29/2$^+$)   460   4250.4

(27/2$^+$)   4087.6

546

(25/2$^+$)   3541.8

Band(A): Possible π=+, seniority=3 states

25/2$^+$ 2890.0

295

23/2$^+$ 2594.4

543

21/2$^+$ 2051.6

333

17/2$^+$ 1718.4

866

13/2$^+$ 852.5

852

9/2$^+$ 0.0

$^{93}_{45}$Rh$_{48}$