^{58}Ni(^{36}Ar,2pnγ): E=149 MeV 1994He09

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

1994He09: E(^{36}Ar)=149 MeV; OSIRIS array (12 escape-suppressed Ge detectors), NE213 n detectors, Si surface barrier charged particle detectors, 99.98% ^{58}Ni target; measured Eγ, Iγ, DCO ratios, $\gamma\gamma$ coin (20 ns time window).

^{91}Ru Levels

See 1994He09 for detailed discussion of likely configurations for ^{91}Ru levels.

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	(9/2$^+$)	2709.3	(19/2$^-$)	3893.9	(23/2$^-$)	5996.4	(33/2$^-$)
973.5	(13/2$^+$)	2927.6	(19/2$^-$)	3969.8	(27/2$^+$)	6085.0	(37/2$^+$)
1872.0	(17/2$^+$)	2985.3	(23/2$^+$)	4035.8	(25/2$^-$)	6313.8	(35/2$^-$)
1893.0	(13/2$^-$)	3004.9	(19/2$^-$)	4151.6	(29/2$^+$)	6922.3	(37/2$^-$)
2200.0	(17/2$^-$)	3164.3	(21/2$^-$)	4379.7	(27/2$^-$)	7515.0	(41/2$^+$)
2253.8	(15/2$^-$)	3192.5	(25/2$^+$)	4991.9	(29/2$^-$)	7516.8	(39/2$^-$)
2369.4	(21/2$^+$)	3554.6	(23/2$^-$)	5108.8	(33/2$^+$)	8148	(41/2$^-$)
2409.3	(17/2$^-$)	3633.6	(25/2$^+$)	5961.7	(35/2$^+$)		

† From least-squares fit to Eγ, allowing equal weight for each γ.
‡ Authors′ values, based on measured DCO ratios and systematics of (HI,xnγ)-type reactions.

γ(^{91}Ru)

E$_\gamma$†	I$_\gamma$‡	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.#	Comments
123.3	4 *2*	6085.0	(37/2$^+$)	5961.7	(35/2$^+$)		
142	2 *1*	4035.8	(25/2$^-$)	3893.9	(23/2$^-$)		
155.6	3 *2*	2409.3	(17/2$^-$)	2253.8	(15/2$^-$)		
181.8	7 *2*	4151.6	(29/2$^+$)	3969.8	(27/2$^+$)	D	Mult.: DCO ratio=0.20 *8* (1994He09).
207.2	20 *1*	3192.5	(25/2$^+$)	2985.3	(23/2$^+$)	D	Mult.: DCO ratio=0.30 *5* (1994He09).
209.5	4 *1*	2409.3	(17/2$^-$)	2200.0	(17/2$^-$)		
218	2 *1*	2927.6	(19/2$^-$)	2709.3	(19/2$^-$)		
236.8	4 *1*	3164.3	(21/2$^-$)	2927.6	(19/2$^-$)		
296.3	3 *1*	3004.9	(19/2$^-$)	2709.3	(19/2$^-$)		
300.1	7 *1*	2709.3	(19/2$^-$)	2409.3	(17/2$^-$)		
306.9	10 *2*	2200.0	(17/2$^-$)	1893.0	(13/2$^-$)		
317.4	15 *2*	6313.8	(35/2$^-$)	5996.4	(33/2$^-$)		
328.1	29 *2*	2200.0	(17/2$^-$)	1872.0	(17/2$^+$)		Mult.: DCO ratio=0.81 *11* (1994He09). Interpreted as ΔJ=0 transition.
336.4	6 *1*	3969.8	(27/2$^+$)	3633.6	(25/2$^+$)		
339	2 *1*	3893.9	(23/2$^-$)	3554.6	(23/2$^-$)		
343.9	15 *2*	4379.7	(27/2$^-$)	4035.8	(25/2$^-$)	D	Mult.: DCO ratio=0.53 *15* (1994He09).
360.9	7 *1*	2253.8	(15/2$^-$)	1893.0	(13/2$^-$)		
390.6	12 *1*	3554.6	(23/2$^-$)	3164.3	(21/2$^-$)	D	Mult.: DCO ratio=0.54 *21* (1994He09).
455	2 *1*	3164.3	(21/2$^-$)	2709.3	(19/2$^-$)		
497.4	41 *3*	2369.4	(21/2$^+$)	1872.0	(17/2$^+$)	Q	Mult.: DCO ratio=0.98 *10* (1994He09).
509.4	4 *2*	2709.3	(19/2$^-$)	2200.0	(17/2$^-$)		
516.2	4 *1*	2409.3	(17/2$^-$)	1893.0	(13/2$^-$)		
549.2	3 *1*	3554.6	(23/2$^-$)	3004.9	(19/2$^-$)		
608.5	10 *1*	6922.3	(37/2$^-$)	6313.8	(35/2$^-$)		
612.2	23 *2*	4991.9	(29/2$^-$)	4379.7	(27/2$^-$)	D+Q	Mult.: DCO ratio=1.6 *3* (1994He09).

Continued on next page (footnotes at end of table)

^{58}Ni(^{36}Ar,2pnγ): E=149 MeV 1994He09 (continued)

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

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
616.1	29 *3*	2985.3	(23/2$^+$)	2369.4	(21/2$^+$)	D	Mult.: DCO ratio=0.48 *6* (1994He09).
648.5	3 *1*	3633.6	(25/2$^+$)	2985.3	(23/2$^+$)		
728.0	6 *1*	2927.6	(19/2$^-$)	2200.0	(17/2$^-$)	D	Mult.: DCO ratio=0.46 *22* (1994He09).
777.3	10 *2*	3969.8	(27/2$^+$)	3192.5	(25/2$^+$)	D	Mult.: DCO ratio=0.51 *20* (1994He09).
804	2 *1*	3004.9	(19/2$^-$)	2200.0	(17/2$^-$)		
822.9	15 *2*	3192.5	(25/2$^+$)	2369.4	(21/2$^+$)	Q	Mult.: DCO ratio=1.20 *24* (1994He09).
825.0	12 *1*	4379.7	(27/2$^-$)	3554.6	(23/2$^-$)		
845.4	8 *1*	3554.6	(23/2$^-$)	2709.3	(19/2$^-$)		
852.9	10 *2*	5961.7	(35/2$^+$)	5108.8	(33/2$^+$)		
871.4	18 *2*	4035.8	(25/2$^-$)	3164.3	(21/2$^-$)	Q	Mult.: DCO ratio=1.02 *20* (1994He09).
889.4	7 *1*	3893.9	(23/2$^-$)	3004.9	(19/2$^-$)		
898.6	90 *5*	1872.0	(17/2$^+$)	973.5	(13/2$^+$)	Q	Mult.: DCO ratio=1.12 *9* (1994He09).
919.4	13 *2*	1893.0	(13/2$^-$)	973.5	(13/2$^+$)		
957.2	23 *2*	5108.8	(33/2$^+$)	4151.6	(29/2$^+$)	Q	Mult.: DCO ratio=1.01 *20* (1994He09).
959.0	35 *4*	4151.6	(29/2$^+$)	3192.5	(25/2$^+$)		Mult.: DCO ratio=0.87 *15* (1994He09).
964.5	19 *2*	3164.3	(21/2$^-$)	2200.0	(17/2$^-$)	Q	Mult.: DCO ratio=1.15 *26* (1994He09).
973.5	100 *2*	973.5	(13/2$^+$)	0.0	(9/2$^+$)	Q	Mult.: DCO ratio=1.18 *10* (1994He09).
976.2	9 *2*	6085.0	(37/2$^+$)	5108.8	(33/2$^+$)		
1004.5	20 *2*	5996.4	(33/2$^-$)	4991.9	(29/2$^-$)		
1022	2 *1*	4991.9	(29/2$^-$)	3969.8	(27/2$^+$)		
1203	12 *2*	7516.8	(39/2$^-$)	6313.8	(35/2$^-$)		
1226	9 *2*	8148	(41/2$^-$)	6922.3	(37/2$^-$)		
1264	4 *1*	3633.6	(25/2$^+$)	2369.4	(21/2$^+$)		
1430	10 *3*	7515.0	(41/2$^+$)	6085.0	(37/2$^+$)		

[†] ΔE_γ=0.1-1.0 keV, depending on energy and intensity.
[‡] Photon intensity at 65° and 115° relative to I(974γ)=100 (1994He09).
[#] Based on measured DCO ratio.

^{58}Ni(^{36}Ar,2pnγ): E=149 MeV 1994He09

Level Scheme

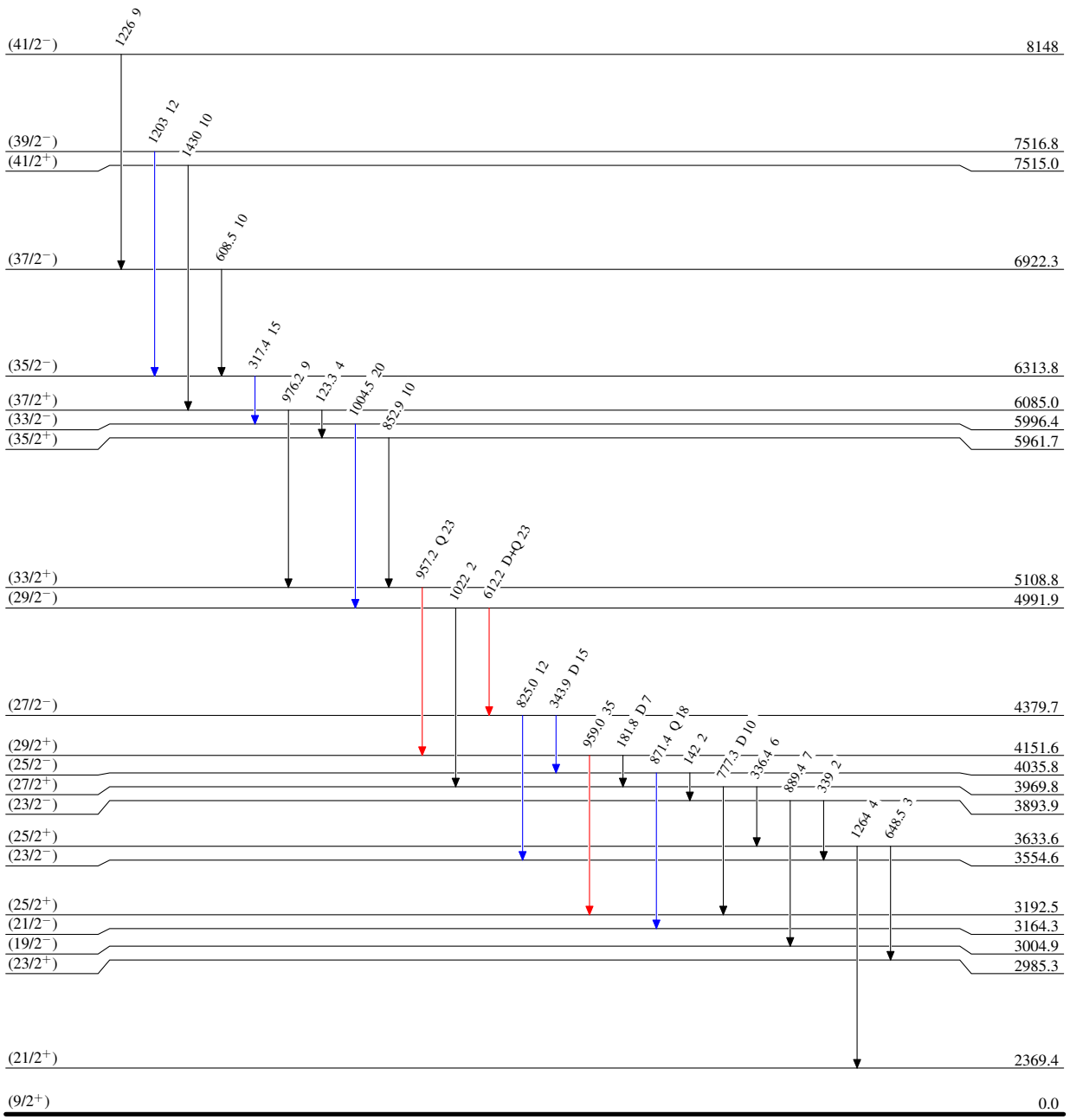
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{91}_{44}Ru_{47}$

^{58}Ni(^{36}Ar,2pnγ): E=149 MeV 1994He09

Level Scheme (continued)

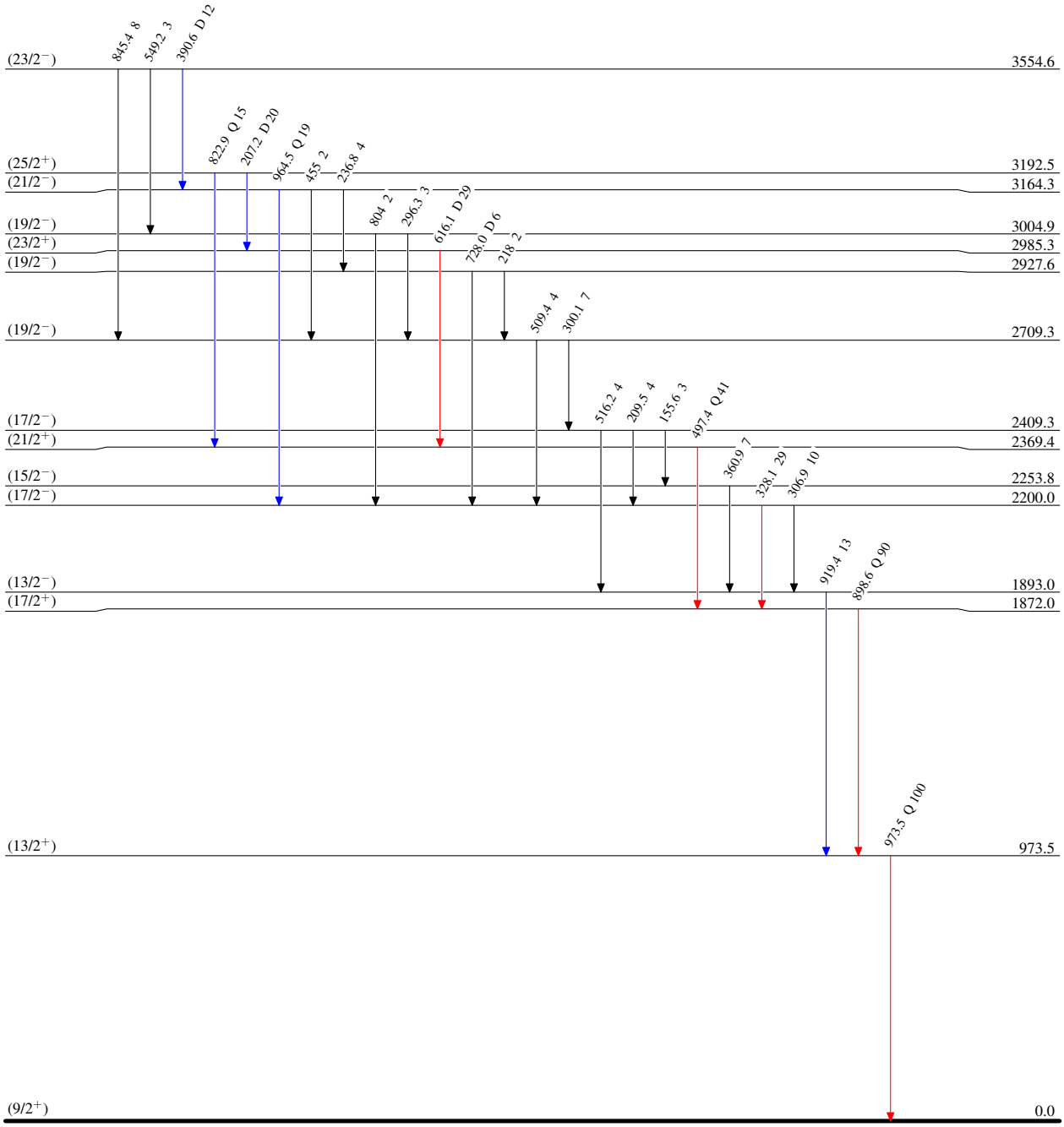
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{91}_{44}Ru_{47}$