^{58}Ni(^{40}Ca,3pnγ) 1994Ar33

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni	NDS 107, 2423 (2006)	1-Jan-2006

E=180 MeV. Measured Eγ, Iγ, $\gamma\gamma$ and $\gamma(\theta)$ using 15 HPGe detectors situated in three rings of the NORDBALL frame.

^{94}Rh Levels

E(level)[†]	J$^\pi$[@]	T$_{1/2}$[&]	E(level)[†]	J$^\pi$[@]
x+0.0[‡]	(8$^+$)	25.8 s *2*	x+7221.8[‡] *3*	(18$^+$)
x+576.47 *16*	(9$^+$)		x+7454.2[#] *4*	(19$^-$)
x+1279.74[‡] *16*	(10$^+$)		x+7568.5 *4*	(19$^-$)
x+1896.43[‡] *25*	(12$^+$)		x+7682.1 *3*	(19$^+$)
x+1975.86[#] *25*	(11$^-$)		x+7714.2[‡] *4*	(19$^+$)
x+2538.6[#] *3*	(12$^-$)		x+8132.8 *4*	(19$^+$)
x+2546.6[‡] *3*	(13$^+$)		x+8224.5 *4*	(20$^+$)
x+2740.6[#] *3*	(13$^-$)		x+8372.9 *4*	(20$^-$)
x+3120.7[‡] *3*	(14$^+$)		x+8430.0 *4*	(20$^-$)
x+3164.9[‡] *3*	(15$^+$)		x+8553.5[‡] *4*	(20$^+$)
x+3864.8[#] *3*	(15$^-$)		x+8724.9[‡] *4*	(21$^+$)
x+4396.4[#] *3*	(17$^-$)		x+8752.9 *4*	(20,21$^+$)
x+4498.4[‡] *3*	(17$^+$)		x+8789.7[#] *4*	(21$^-$)
x+4642.7 *3*	(16$^-$)		x+9096.7[#] *4*	(21$^-$)
x+6447.0 *4*	(18$^-$)		x+9795.3[#] *4*	(22$^-$)
x+6566.4 *3*	(19$^-$)		x+10104.6[‡] *4*	(23$^+$)
x+6699.7 *3*	(18$^-$)		x+10425.9[#] *4*	(23$^-$)

[†] From least-squares fit to Eγ, assuming ΔEγ=0.2 keV for each γ ray. 1994Ar33 quote 0.2 keV to 1 keV uncertainty based on intensity.
[‡] Band(A): γ cascade based on (8$^+$).
[#] Band(B): γ cascade based on (11$^-$).
[@] From $\gamma\gamma(\theta)$ and band patterns, with the assumption that the lowest energy level observed in this experiment is the (8$^+$) isomer.
[&] From Adopted Levels.

γ(^{94}Rh)

Asymmetry ratio R=2I(143°)/[I(79°)+I(101°)].

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Comments
44.2 *2*	4.1 *12*	x+3164.9	(15$^+$)	x+3120.7	(14$^+$)	
171.6 *2*	5.0 *7*	x+8724.9	(21$^+$)	x+8553.5	(20$^+$)	R=0.73 *18*.
201.9 *2*	73 *3*	x+2740.6	(13$^-$)	x+2538.6	(12$^-$)	R=0.87 *4*.
246.0 *2*	6.0 *10*	x+4642.7	(16$^-$)	x+4396.4	(17$^-$)	R=0.93 *23*.
306.6 *2*	31.4 *17*	x+9096.7	(21$^-$)	x+8789.7	(21$^-$)	R=0.82 *7*.
359.6 *2*	1.9 *6*	x+8789.7	(21$^-$)	x+8430.0	(20$^-$)	
416.4 *2*	2.2 *7*	x+8789.7	(21$^-$)	x+8372.9	(20$^-$)	
420.6 *2*	2.5 *7*	x+8553.5	(20$^+$)	x+8132.8	(19$^+$)	
460.2 *2*	2.8 *8*	x+7682.1	(19$^+$)	x+7221.8	(18$^+$)	
492.5 *2*	9.6 *15*	x+7714.2	(19$^+$)	x+7221.8	(18$^+$)	R=0.58 *19*.
500.2 *2*	12.0 *13*	x+8724.9	(21$^+$)	x+8224.5	(20$^+$)	R=0.77 *17*.

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^{58}Ni(^{40}Ca,3pnγ) 1994Ar33 (continued)

γ(^{94}Rh) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
510.1 2	4.0 14	x+8224.5	(20$^+$)	x+7714.2	(19$^+$)		
528.4 2	2.0 7	x+8752.9	(20,21$^+$)	x+8224.5	(20$^+$)		
531.7 2	88 3	x+4396.4	(17$^-$)	x+3864.8	(15$^-$)		R=1.53 3.
542.3 2	21.0 20	x+8224.5	(20$^+$)	x+7682.1	(19$^+$)		R=0.47.
562.6 2	90 3	x+2538.6	(12$^-$)	x+1975.86	(11$^-$)		R=0.77 4.
574.0 2	32.1 19	x+3120.7	(14$^+$)	x+2546.6	(13$^+$)		R=0.68 7.
576.4 2	49.7 23	x+576.47	(9$^+$)	x+0.0	(8$^+$)		R=0.83 6.
616.7[‡] 2	74[‡] 3	x+1896.43	(12$^+$)	x+1279.74	(10$^+$)		R=1.69 11 for 616.7+618.4. I_γ: combined for 616.7+618.4.
618.4[‡] 2	74[‡] 3	x+3164.9	(15$^+$)	x+2546.6	(13$^+$)	E2	R=1.69 11 for 616.7+618.4. I_γ: combined for 616.7+618.4.
630.3 2	16.8 17	x+10425.9	(23$^-$)	x+9795.3	(22$^-$)		R=1.05 18.
650.2 2	53 4	x+2546.6	(13$^+$)	x+1896.43	(12$^+$)		R=0.89 11.
696.1 2	94 4	x+1975.86	(11$^-$)	x+1279.74	(10$^+$)	E1	R=0.79 5.
698.3[‡] 2	21.9[‡] 22	x+9795.3	(22$^-$)	x+9096.7	(21$^-$)		R=1.15 19 for 698.3+699.9. I_γ: combined for 698.3+699.9.
699.9[‡] 2	21.9[‡] 22	x+3864.8	(15$^-$)	x+3164.9	(15$^+$)		R=1.15 19 for 698.3+699.9. I_γ: combined for 698.3+699.9.
703.2 2	51.3 23	x+1279.74	(10$^+$)	x+576.47	(9$^+$)		R=0.70 5.
764.9 2	3.1 9	x+2740.6	(13$^-$)	x+1975.86	(11$^-$)		
777.9 2	3.6 10	x+4642.7	(16$^-$)	x+3864.8	(15$^-$)		
839.6 2	5.7 12	x+8553.5	(20$^+$)	x+7714.2	(19$^+$)		
910.9 2	3.7 10	x+8132.8	(19$^+$)	x+7221.8	(18$^+$)		
975.6 2	2.6 7	x+8430.0	(20$^-$)	x+7454.2	(19$^-$)		
982.3 2	6.5 20	x+7682.1	(19$^+$)	x+6699.7	(18$^-$)		
1115.9 2	5.9 14	x+7682.1	(19$^+$)	x+6566.4	(19$^-$)		R=1.64 32.
1124.1 2	89 4	x+3864.8	(15$^-$)	x+2740.6	(13$^-$)		R=1.64 11.
1279.8 2	100 3	x+1279.74	(10$^+$)	x+0.0	(8$^+$)		R=1.54 9.
1329.5 2	2.8 9	x+10425.9	(23$^-$)	x+9096.7	(21$^-$)		
1333.4 2	31.8 18	x+4498.4	(17$^+$)	x+3164.9	(15$^+$)		R=1.46 20.
1335.6 2	20.5 17	x+8789.7	(21$^-$)	x+7454.2	(19$^-$)		R=1.49 41.
1379.7 2	10.1 24	x+10104.6	(23$^+$)	x+8724.9	(21$^+$)		R=2.6 12.
1806.1 2	2.0 9	x+8372.9	(20$^-$)	x+6566.4	(19$^-$)		
2050.6 2	4.6 19	x+6447.0	(18$^-$)	x+4396.4	(17$^-$)		
2056.5 2	1.7 9	x+6699.7	(18$^-$)	x+4642.7	(16$^-$)		
2170.2 2	20.3 20	x+6566.4	(19$^-$)	x+4396.4	(17$^-$)		R=1.92 36.
2223.5 2	5.2 20	x+8789.7	(21$^-$)	x+6566.4	(19$^-$)		
2303.6 2	7.3 10	x+6699.7	(18$^-$)	x+4396.4	(17$^-$)		R=0.85 20.
2530.6 2	1.9 10	x+9096.7	(21$^-$)	x+6566.4	(19$^-$)		
2723.4 2	12.2 15	x+7221.8	(18$^+$)	x+4498.4	(17$^+$)		R=0.82 20.
3057.7 2	18.7 17	x+7454.2	(19$^-$)	x+4396.4	(17$^-$)		R=1.30 21.
3172.1 2	1.5 7	x+7568.5	(19$^-$)	x+4396.4	(17$^-$)		
3183.6 2	5.0 11	x+7682.1	(19$^+$)	x+4498.4	(17$^+$)		R=1.38 55.

[†] From Asymmetry Ratio R (1994Ar33). R=0.5-1.9 for E1,M1 and 1.0-3 for E2.

[‡] Multiply placed with undivided intensity.

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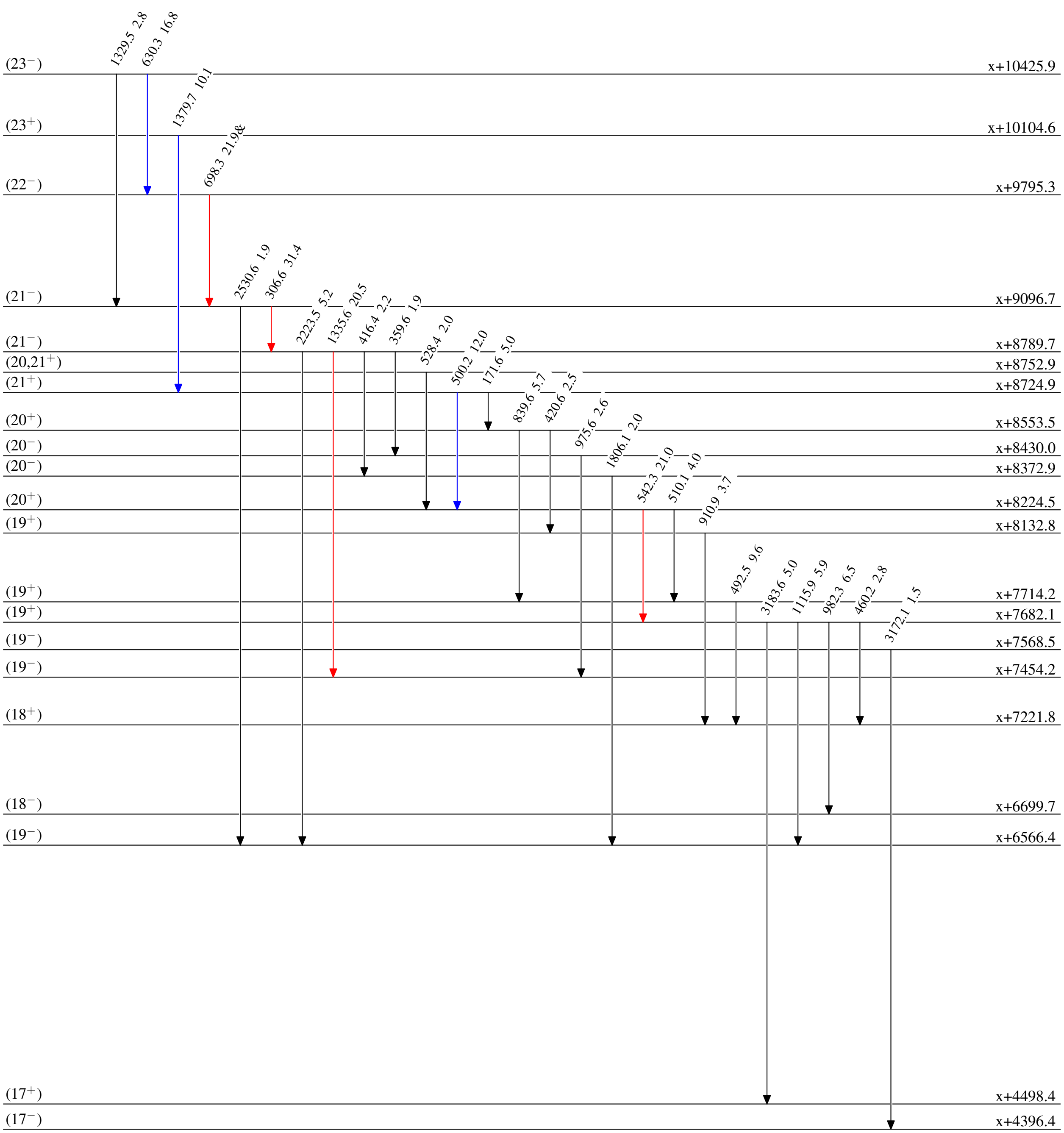
Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$

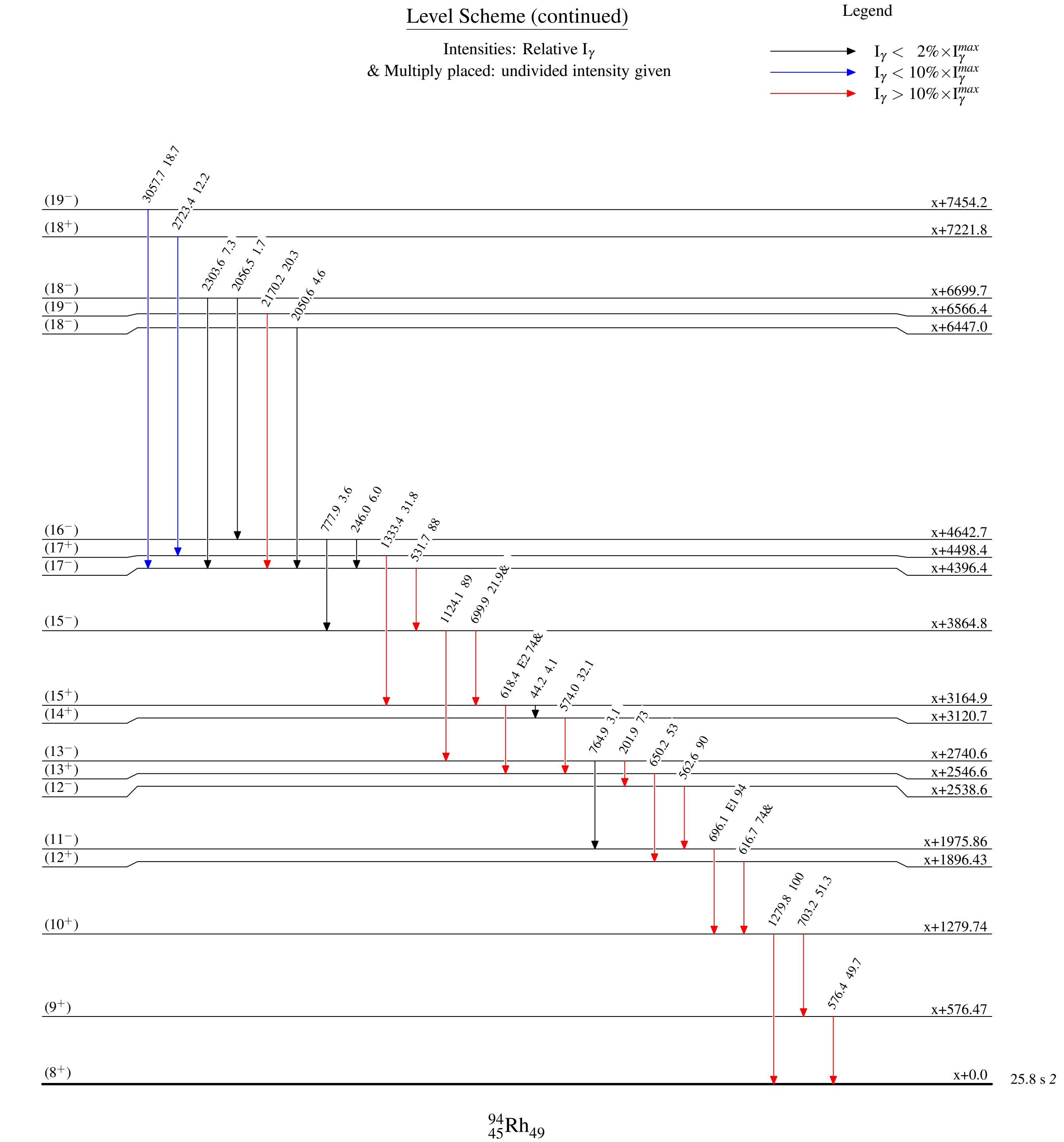


$^{94}_{45}Rh_{49}$

^{58}Ni(^{40}Ca,3pnγ) 1994Ar33

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given



$^{94}_{45}Rh_{49}$

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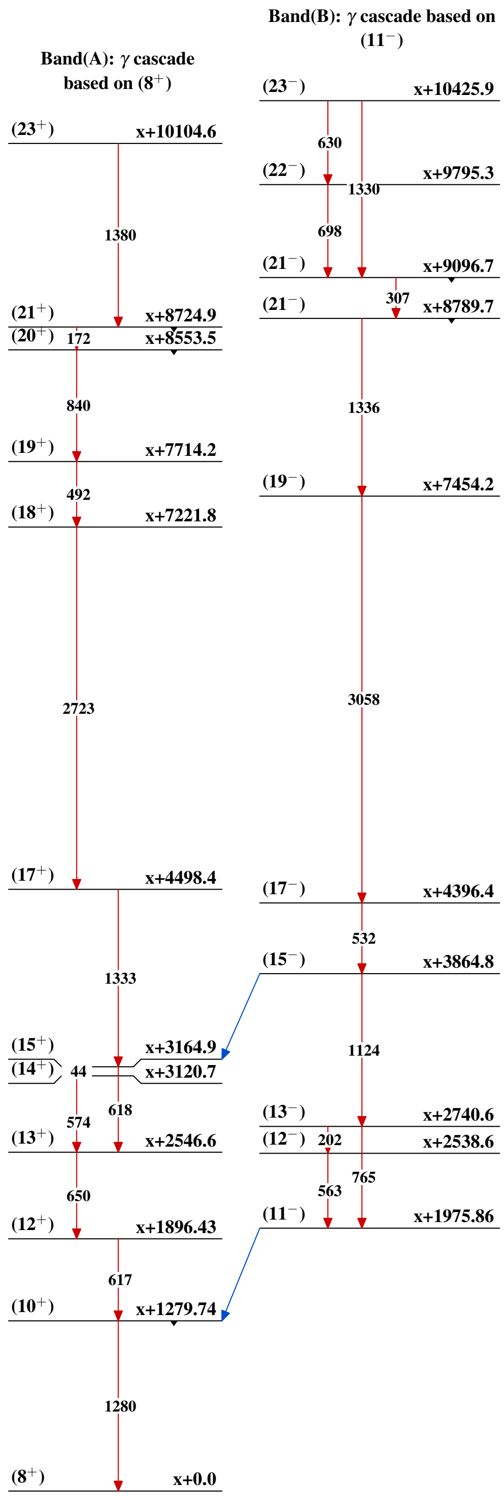

$^{94}_{45}Rh_{49}$