

⁹⁶Zr(⁹Be,4n γ) 2002Ya13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2006

2002Ya13: E=44 MeV. Measured E γ , I γ , $\gamma\gamma$, $\gamma\gamma(\theta)$ (DCO) using the YRASTBALL array comprised of 6 four-element clover detectors and 5 coaxial Ge detectors.

¹⁰¹Ru Levels

E(level) [†]	J π	T _{1/2}	E(level) [†]	J π	E(level) [†]	J π
0 [‡]	5/2 ⁺		3052.6 [‡] 4	21/2 ⁺	5265.0 16	(29/2,27/2)
307.24 [#] 18	7/2 ⁺		3236.6 16	(23/2,21/2)	5374.5 15	(29/2,31/2)
528.2 [@] 3	11/2 ⁻	17 μ s	3290.8 9	(27/2 ⁺)	5374.9 [‡] 7	33/2 ⁺
545.1 3	7/2 ⁺		3443.8 [#] 5	23/2 ⁺	5831.0 [@] 7	35/2 ⁻
720.45 [‡] 21	9/2 ⁺		3478.1 [@] 5	27/2 ⁻	5902.7 14	(35/2,33/2)
959.3 [@] 3	15/2 ⁻		3656.0 11		5946.4 [#] 7	(35/2 ⁺)
1002.1 [#] 4	11/2 ⁺		3681.5 [‡] 5	25/2 ⁺	6469.1 [‡] 9	(37/2 ⁺)
1501.2 [‡] 4	13/2 ⁺		3714.0 11		7076.8 [#] 11	(39/2 ⁺)
1623.6 [@] 4	19/2 ⁻		4140.9 [#] 6	(27/2 ⁺)	7095.5 [@] 9	(39/2 ⁻)
1863.7 [#] 4	15/2 ⁺		4182.8 ^{&} 5	(27/2 ⁺)	7678.9 [‡] 11	(41/2 ⁺)
2379.2 [‡] 4	17/2 ⁺		4451.2 [‡] 6	29/2 ⁺	8318.2 [#] 15	(43/2 ⁺)
2475.0 [@] 5	23/2 ⁻		4616.3 [@] 6	31/2 ⁻	8432.5 [@] 11	(43/2 ⁻)
2825.4 [#] 5	19/2 ⁺		4967.5 [#] 7	(31/2 ⁺)	9002.5 [‡] 13	(45/2 ⁺)
2887.4 ^{&} 5	19/2 ⁺		5233.2 ^{&} 7	(31/2 ⁺)	9826.2 [@] 14	(47/2 ⁻)

[†] From least-squares fit to E γ 's.

[‡] Band(A): 5/2[413], $\alpha=+1/2$.

[#] Band(a): 5/2[413], $\alpha=-1/2$.

[@] Band(B): 1/2[550].

[&] Band(C): Band based on (27/2⁺).

$\gamma(^{101}\text{Ru})$

Note that the following γ rays are listed twice in table I: 1181.0, 1206.2, 1209.8, 1214.7.

E γ	I γ	E _i (level)	J π _i	E _f	J π _f	Comments
175.3 3	4.6 2	720.45	9/2 ⁺	545.1	7/2 ⁺	
221.0 2	25.4 10	528.2	11/2 ⁻	307.24	7/2 ⁺	
281.0 5	1.6 2	1002.1	11/2 ⁺	720.45	9/2 ⁺	
307.4 2	21.4 20	307.24	7/2 ⁺	0	5/2 ⁺	DCO=0.50 7
363.0 5	1.0 4	1863.7	15/2 ⁺	1501.2	13/2 ⁺	
391.8 5	1.6 4	3443.8	23/2 ⁺	3052.6	21/2 ⁺	
413.7 4	2.6 2	720.45	9/2 ⁺	307.24	7/2 ⁺	
431.1 2	58.6 22	959.3	15/2 ⁻	528.2	11/2 ⁻	DCO=0.97 14
459.4 5	2.2 2	4140.9	(27/2 ⁺)	3681.5	25/2 ⁺	
500.6 6	1.4 2	4182.8	(27/2 ⁺)	3681.5	25/2 ⁺	
516.4 6	1.4 2	4967.5	(31/2 ⁺)	4451.2	29/2 ⁺	
545.1 4	8.5 30	545.1	7/2 ⁺	0	5/2 ⁺	
556.3 5	1.2 4	3443.8	23/2 ⁺	2887.4	19/2 ⁺	

Continued on next page (footnotes at end of table)

$^{96}\text{Zr}(^9\text{Be},4n\gamma)$ **2002Ya13** (continued) $\gamma(^{101}\text{Ru})$ (continued)

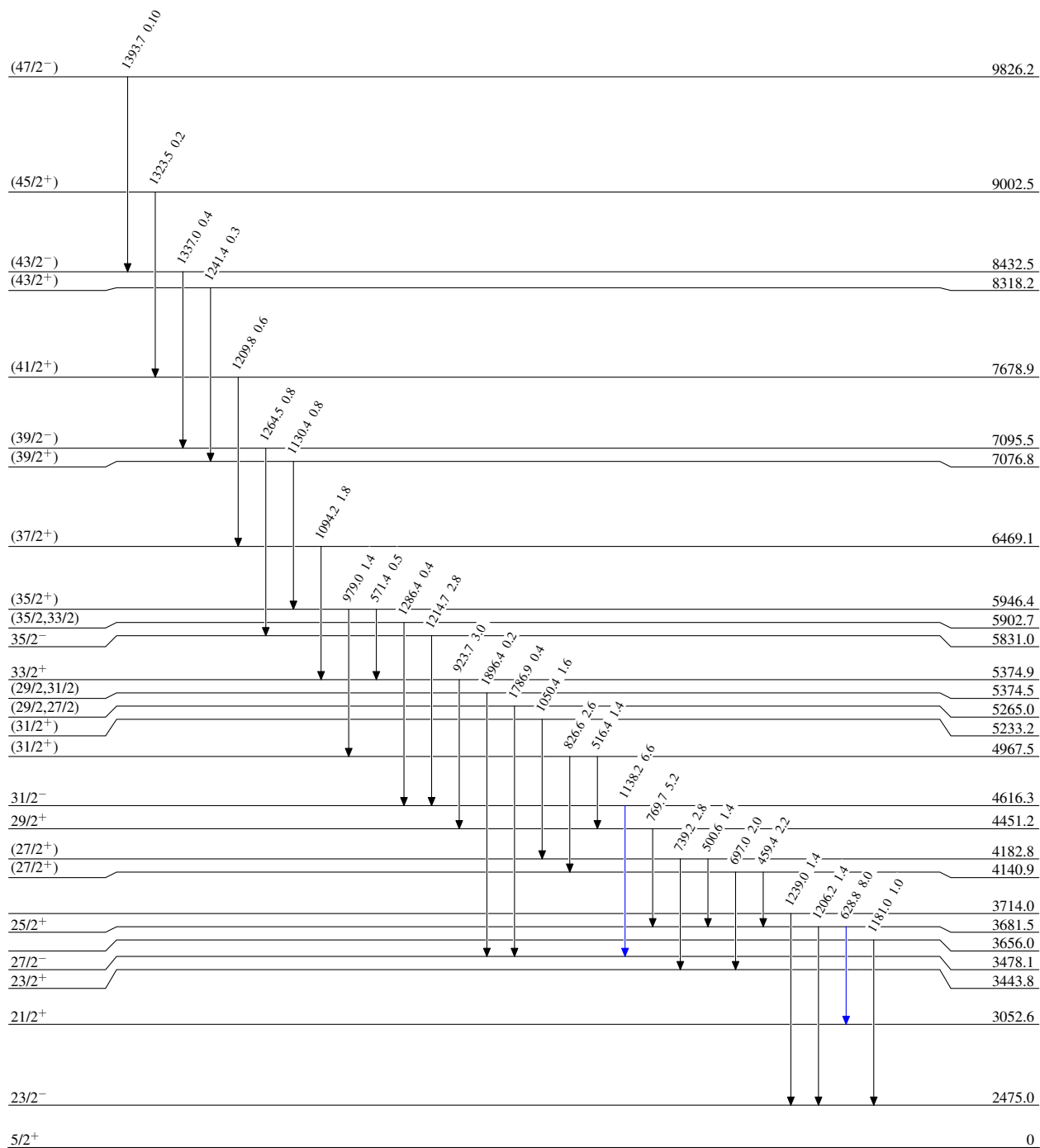
E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
571.4 4	0.5 2	5946.4	(35/2 ⁺)	5374.9	33/2 ⁺	Initial level listed as 5956 in Table I seems to be a misprint.
618.4 4	3.8 4	3443.8	23/2 ⁺	2825.4	19/2 ⁺	DCO=1.1 3
628.8 3	8.0 4	3681.5	25/2 ⁺	3052.6	21/2 ⁺	DCO=0.93 16
664.3 2	54.2 16	1623.6	19/2 ⁻	959.3	15/2 ⁻	DCO=0.98 14
673.4 3	8.2 6	3052.6	21/2 ⁺	2379.2	17/2 ⁺	
695.0 4	18.6 8	1002.1	11/2 ⁺	307.24	7/2 ⁺	
697.0 7	2.0 2	4140.9	(27/2 ⁺)	3443.8	23/2 ⁺	
720.1 3	11.5 7	720.45	9/2 ⁺	0	5/2 ⁺	DCO=0.88 13
739.2 3	2.8 4	4182.8	(27/2 ⁺)	3443.8	23/2 ⁺	
769.7 3	5.2 6	4451.2	29/2 ⁺	3681.5	25/2 ⁺	DCO=0.84 19
781.0 4	18.0 6	1501.2	13/2 ⁺	720.45	9/2 ⁺	DCO=0.98 18
815.8 8	2.2 4	3290.8	(27/2 ⁺)	2475.0	23/2 ⁻	
826.6 7	2.6 4	4967.5	(31/2 ⁺)	4140.9	(27/2 ⁺)	
851.3 3	31.0 10	2475.0	23/2 ⁻	1623.6	19/2 ⁻	DCO=0.83 12
861.2 4	8.8 6	1863.7	15/2 ⁺	1002.1	11/2 ⁺	
878.0 3	8.6 8	2379.2	17/2 ⁺	1501.2	13/2 ⁺	DCO=0.99 18
923.7 5	3.0 6	5374.9	33/2 ⁺	4451.2	29/2 ⁺	DCO=1.05 24
961.7 4	4.2 4	2825.4	19/2 ⁺	1863.7	15/2 ⁺	
968.6 8	1.0 2	3443.8	23/2 ⁺	2475.0	23/2 ⁻	
979.0 8	1.4 2	5946.4	(35/2 ⁺)	4967.5	(31/2 ⁺)	
1003.1 3	14.6 6	3478.1	27/2 ⁻	2475.0	23/2 ⁻	DCO=0.76 19
1023.7 4	1.6 2	2887.4	19/2 ⁺	1863.7	15/2 ⁺	
1050.4 5	1.6 2	5233.2	(31/2 ⁺)	4182.8	(27/2 ⁺)	
1094.2 5	1.8 2	6469.1	(37/2 ⁺)	5374.9	33/2 ⁺	
1130.4 8	0.8 2	7076.8	(39/2 ⁺)	5946.4	(35/2 ⁺)	
1138.2 3	6.6 4	4616.3	31/2 ⁻	3478.1	27/2 ⁻	DCO=0.67 19
1181.0 10	1.0 2	3656.0		2475.0	23/2 ⁻	
1206.2 8	1.4 4	3681.5	25/2 ⁺	2475.0	23/2 ⁻	
1209.8 6	0.6 2	7678.9	(41/2 ⁺)	6469.1	(37/2 ⁺)	
1214.7 3	2.8 2	5831.0	35/2 ⁻	4616.3	31/2 ⁻	DCO=0.94 33
1239.0 10	1.4 2	3714.0		2475.0	23/2 ⁻	
1241.4 10	0.3 1	8318.2	(43/2 ⁺)	7076.8	(39/2 ⁺)	
1264.5 5	0.8 2	7095.5	(39/2 ⁻)	5831.0	35/2 ⁻	
1286.4 12	0.4 1	5902.7	(35/2,33/2)	4616.3	31/2 ⁻	
1323.5 7	0.2 1	9002.5	(45/2 ⁺)	7678.9	(41/2 ⁺)	
1337.0 7	0.4 2	8432.5	(43/2 ⁻)	7095.5	(39/2 ⁻)	
1393.7 8	0.10 5	9826.2	(47/2 ⁻)	8432.5	(43/2 ⁻)	
1429.6 6	2.2 2	3052.6	21/2 ⁺	1623.6	19/2 ⁻	DCO=0.38 15
1613.0 15	1.0 4	3236.6	(23/2,21/2)	1623.6	19/2 ⁻	
1786.9 15	0.4 2	5265.0	(29/2,27/2)	3478.1	27/2 ⁻	
1896.4 15	0.2 1	5374.5	(29/2,31/2)	3478.1	27/2 ⁻	

⁹⁶Zr(⁹Be,4n γ) 2002Ya13

Level Scheme
Intensities: Relative I _{γ}

Legend

- I _{γ} < 2% × I _{γ} ^{max}
- I _{γ} < 10% × I _{γ} ^{max}
- I _{γ} > 10% × I _{γ} ^{max}



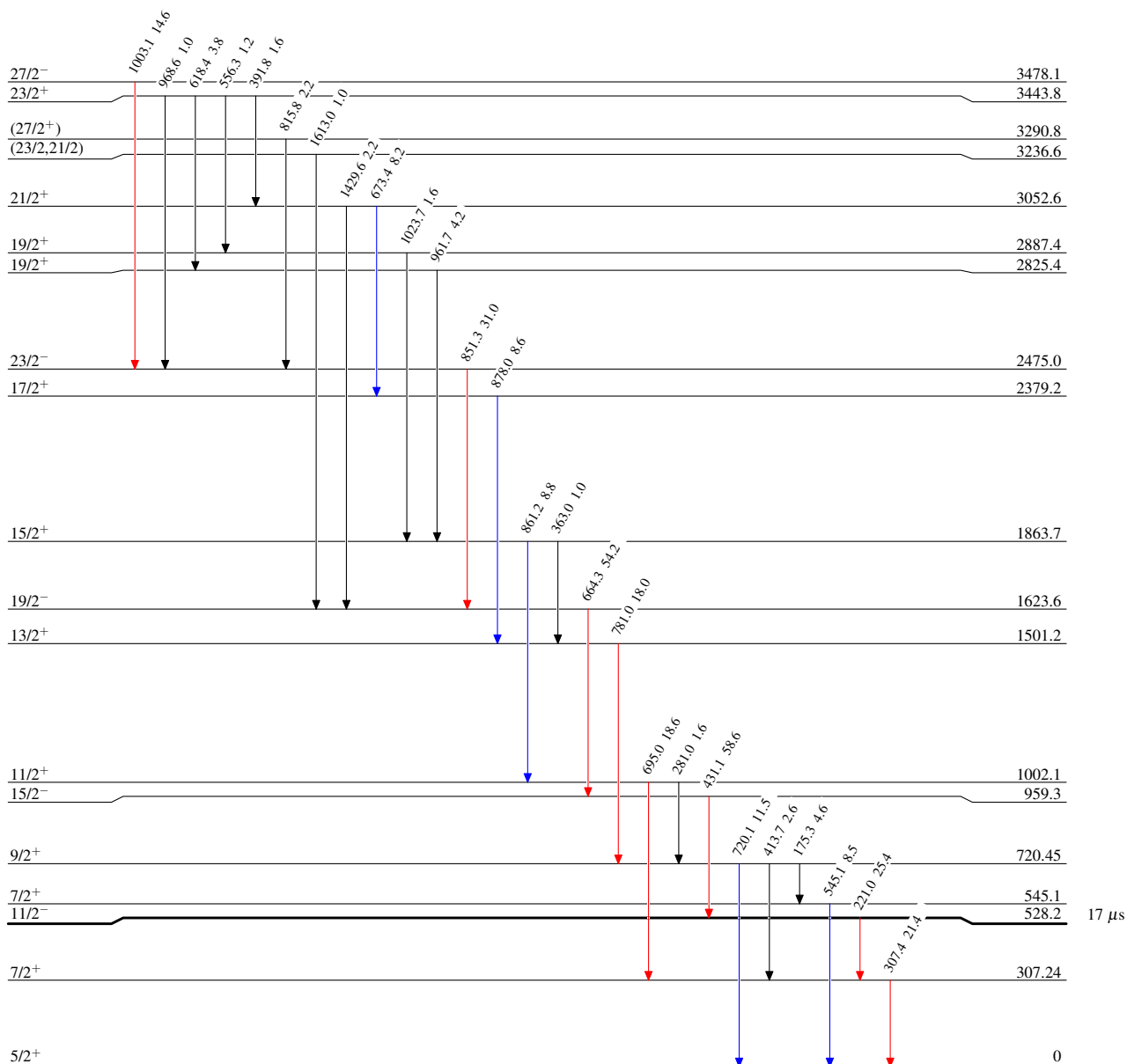
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Level Scheme (continued)

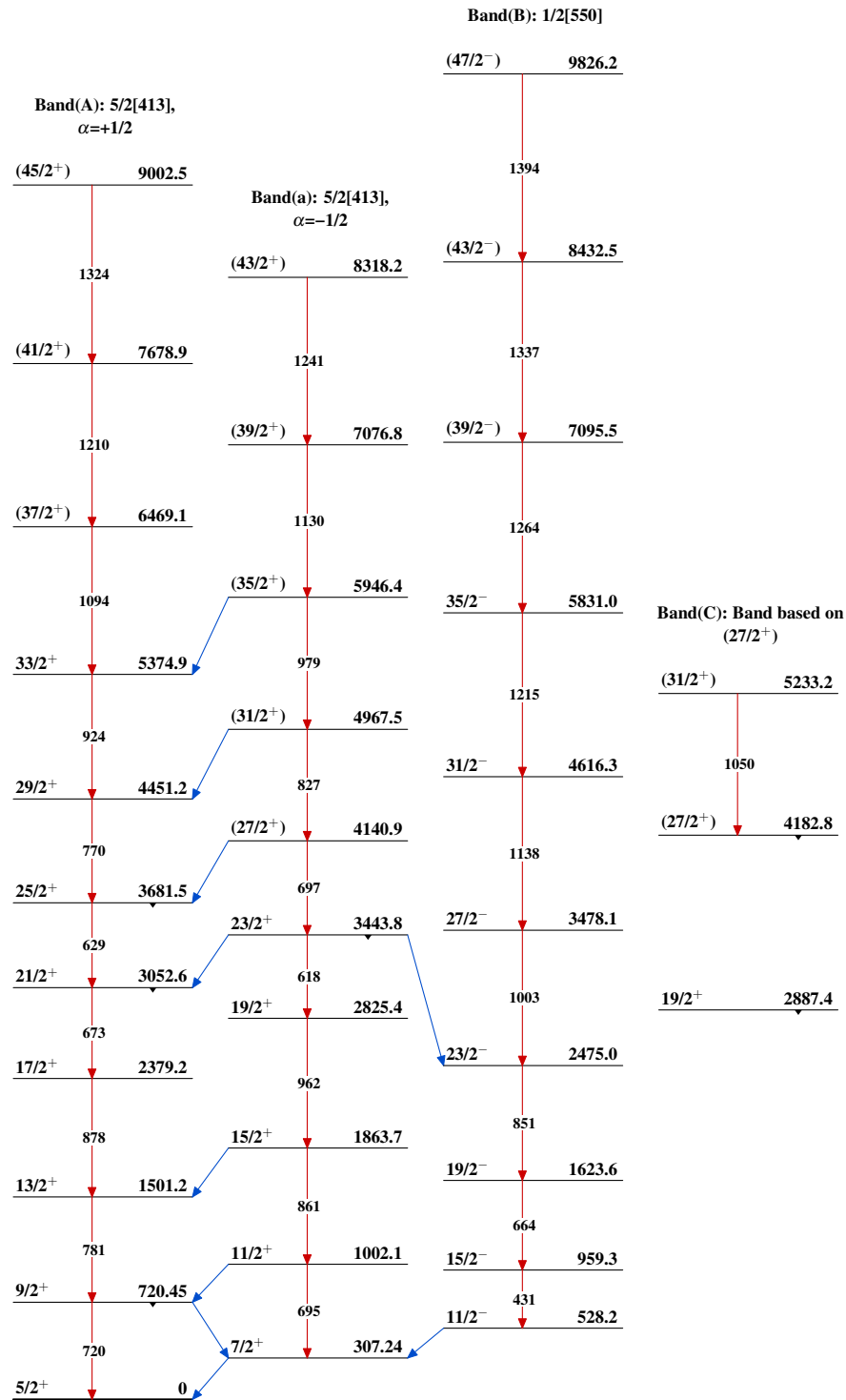
Intensities: Relative I γ

Legend

- I γ < 2% \times I γ ^{max}
- I γ < 10% \times I γ ^{max}
- I γ > 10% \times I γ ^{max}



¹⁰¹Ru₅₇

$^{96}\text{Zr}(^9\text{Be},4n\gamma)$ 2002Ya13 $^{101}_{44}\text{Ru}_{57}$