		History	
Туре	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 110, 1 (2009)	20-Nov-2008

E=149 MeV. Measured E γ , I γ , $\gamma\gamma$ using Gammasphere array of 84 Compton suppressed HPGe detectors. Deduced SD bands. Tentative six SD bands reported.

Other: 1995CeZZ report observation of three SD bands from a γ -ray study (EUROGAM array) using reaction: ¹³⁰Te(²⁶Mg,5n γ)

E=149 MeV. The details of this study are not available.

¹⁵¹Gd Levels

All band assignments are from 1998ErZY and 1999ErZZ.

E(level)	\mathbf{J}^{π}	E(level)	\mathbf{J}^{π}	E(level)	J^{π}
\mathbf{x}^{\dagger}	J≈(57/2 ⁺)	11581.7+y [‡] <i>17</i>	J1+24	2622.6+u [@] 9	J3+6
746.4+x [†] 8	J+2	12850.3+y [‡] 18	J1+26	3580.9+u [@] 10	J3+8
1535.3+x [†] 9	J+4	14170.7+y [‡] <i>18</i>	J1+28	4581.8+u [@] 10	J3+10
2366.6+x [†] 10	J+6	15543.3+y [‡] 19	J1+30	5627.7+u [@] 11	J3+12
3240.1+x [†] 11	J+8	16969.3+y [‡] 19	J1+32	6718.8+u [@] 12	J3+14
4156.4+x [†] 11	J+10	18449.0+y [‡] 20	J1+34	7856.2+u [@] 13	J3+16
5116.2+x [†] 11	J+12	19983.5+y [‡] 21	J1+36	9042.1+u [@] 16	J3+18
6120.4+x [†] 13	J+14	21573.0+y [‡] 23	J1+38	10278.2+u [@] 16	J3+20
7169.4+x [†] <i>13</i>	J+16	23218+y [‡] 3	J1+40	11564.3+u [@] 17	J3+22
8266.1+x [†] 14	J+18	24919+y [‡] 3	J1+42	12901.9+u [@] 17	J3+24
9410.3+x [†] 14	J+20	z#	J2≈(59/2 ⁻)	14290.6+u [@] 18	J3+26
10603.3+x [†] 14	J+22	755.7+z [#] 4	J2+2	15734.0+u [@] 19	J3+28
11846.4+x [†] 15	J+24	1561.3+z [#] 6	J2+4	17231.8+u [@] 22	J3+30
13141.0+x [†] 16	J+26	2417.2+z [#] 11	J2+6	18783+u [@] 3	J3+32
14487.4+x [†] 17	J+28	3324.0+z [#] 14	J2+8	$20390 + u^{@} 4$	J3+34
15886.5+x [†] 17	J+30	4282.6+z [#] 15	J2+10	v&	J4≈(63/2 ⁻)
17339.1+x [†] 18	J+32	5294.6+z [#] 16	J2+12	808.6+v ^{&} 4	J4+2
18846.3+x [†] 18	J+34	6360.7+z [#] 18	J2+14	1662.8+v& 6	J4+4
20408.3+x [†] 19	J+36	7481.4+z [#] 19	J2+16	2558.1+v& 9	J4+6
22026.2+x [†] 20	J+38	8656.9+z [#] 21	J2+18	3495.7+v& 9	J4+8
23701.0+x [†] 22	J+40	9887.3+z [#] 22	J2+20	4474.9+v& 12	J4+10
y‡	$J1 \approx (55/2^+)$	11174.0+z [#] 22	J2+22	5498.7+v& 12	J4+12
725.5+y [‡] 8	J1+2	12516.7+z [#] 22	J2+24	6566.9+v ^{&} 13	J4+14
1493.9+y [‡] 10	J1+4	13916.1+z [#] 23	J2+26	7681.0+v ^{&} 14	J4+16
2304.4+y [‡] <i>13</i>	J1+6	15372.4+z [#] 23	J2+28	8842.6+v ^{&} 15	J4+18
3157.0+y [‡] 14	J1+8	16885.8+z [#] 24	J2+30	10052.3+v ^{&} 17	J4+20
4052.4+y [‡] 14	J1+10	18455.8+z [#] 24	J2+32	11313.6+v& 17	J4+22
4991.2+y [‡] 15	J1+12	20083.5+z [#] 25	J2+34	12626.1+v& 18	J4+24
5973.5+y [‡] 15	J1+14	$21769 + z^{\#} 3$	J2+36	13989.3+v ^{&} 19	J4+26
7001.0+y [‡] 15	J1+16	$23512 + z^{\#} 3$	J2+38	15406.0+v ^{&} 20	J4+28
8074.3+y [∓] 16	J1+18	u [@]	J3≈(65/2 ⁻)	16875.6+v ^{&} 25	J4+30
9194.4+y [‡] 16	J1+20	832.8+u [@] 6	J4+2	18400+v ^{&} 3	J4+32
10363.7+y [‡] 17	J1+22	1706.8+u [@] 8	J3+4	19980+v ^{&} 4	J4+34

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¹⁵¹Gd Levels (continued)

E(level)	J^{π}	E(level)	\mathbf{J}^{π}	E(level)	J^{π}
$21615 + v^{\&} 4$	J4+36	5515.7+w ^a 19	J5+12	$13942 + w^a 3$	J5+26
$^{w^{a}}_{817.8+w^{a}}$ 7	J5≈(61/2 ⁻) J5+2	$6580.6+w^{a}$ 20 7688.7+w ^a 20	J5+14 J5+16	$15343 + w^a 3$ $16795 + w^a 4$	J5+28 J5+30
1677.9+w ^a 15	J5+4	8843.1+w ^a 21	J5+18	18300+w ^{<i>a</i>} 4	J5+32
2577.7+w ^a 16	J5+6	10043.8+w ^a 22	J5+20	19855+w ^a 4	J5+34
3516.1+w ^a 17	J5+8	11293.1+w ^a 22	J5+22		
4494.6+w ^a 18	J5+10	12592.3+w ^a 24	J5+24		

[†] Band(A): SD-1 band. Configuration= $\pi 6^2 v 7^2 v 5/2 [402]^1$; $\alpha = +1/2$.

[±] Band(A): SD-1 band. Configuration= $\pi 6^2 v 7^2 v 5/2[402]^1$; $\alpha = -1/2$. Band intensity=92% 2 of SD-1 band. [#] Band(B): SD-3 band. Configuration= $\pi 6^2 v 7^1 v 5/2[402]^2$; $\alpha = -1/2$ Band intensity=85% 2 of SD-1 band. [@] Band(C): SD-4 band. Configuration= $\pi 6^2 v 7^2 v 9/2[514]^1$; $\alpha = +1/2$ Band intensity=77% 2 of SD-1 band. [&] Band(c): SD-5 band. Configuration= $\pi 6^2 v 7^2 v 9/2[514]^1$; $\alpha = -1/2$ Band intensity=54% 2 of SD-1 band. ^a Band(D): SD-6 band. Configuration= $\pi 6^2 v 7^2 v 3/2[521]^1$; $\alpha = +1/2$ Band intensity=38% 2 of SD-1 band.

Eγ	I_{γ}^{\dagger}	E_i (level)	\mathbf{J}_i^{π}	\mathbf{E}_{f}	\mathbf{J}_f^{π}
725.5 8	22.1 16	725.5+y	J1+2	v	$J1 \approx (55/2^+)$
746.4 8	0.226 15	746.4+x	J+2	x	J≈(57/2 ⁺)
755.7 4	0.594 16	755.7+z	J2+2	Z	$J2 \approx (59/2^{-})$
768.4 5	0.48 3	1493.9+y	J1+4	725.5+y	J1+2
788.9 4	0.543 22	1535.3+x	J+4	746.4+x	J+2
805.6 4	0.705 17	1561.3+z	J2+4	755.7+z	J2+2
808.6 4	0.391 15	808.6+v	J4+2	v	J4≈(63/2 ⁻)
810.5 9	0.696 24	2304.4+y	J1+6	1493.9+y	J1+4
817.8 7	0.220 19	817.8+w	J5+2	W	J5≈(61/2 ⁻)
831.3 4	0.654 18	2366.6+x	J+6	1535.3+x	J+4
832.8 6	0.424 17	832.8+u	J4+2	u	J3≈(65/2 ⁻)
852.6 4	0.915 20	3157.0+y	J1+8	2304.4+y	J1+6
854.2 <i>4</i>	0.571 15	1662.8+v	J4+4	808.6+v	J4+2
855.9 9	1.021 21	2417.2+z	J2+6	1561.3+z	J2+4
860.0 13	0.365 18	1677.9+w	J5+4	817.8+w	J5+2
873.5 <i>3</i>	0.886 19	3240.1+x	J+8	2366.6+x	J+6
874.0 4	0.713 17	1706.8+u	J3+4	832.8+u	J4+2
895.3 6	0.914 19	2558.1+v	J4+6	1662.8+v	J4+4
895.4 <i>3</i>	0.930 19	4052.4+y	J1+10	3157.0+y	J1+8
899.8 <i>5</i>	0.501 16	2577.7+w	J5+6	1677.9+w	J5+4
906.8 8	0.915 18	3324.0+z	J2+8	2417.2+z	J2+6
915.8 <i>5</i>	0.925 19	2622.6+u	J3+6	1706.8+u	J3+4
916.3 <i>3</i>	0.902 19	4156.4+x	J+10	3240.1+x	J+8
937.5 <i>3</i>	0.987 18	3495.7+v	J4+8	2558.1+v	J4+6
938.4 7	0.596 19	3516.1+w	J5+8	2577.7+w	J5+6
938.7 <i>3</i>	1.005 20	4991.2+y	J1+12	4052.4+y	J1+10
958.3 <i>3</i>	0.971 18	3580.9+u	J3+8	2622.6+u	J3+6
958.7 7	1.012 18	4282.6+z	J2+10	3324.0+z	J2+8
959.8 <i>3</i>	1.013 19	5116.2+x	J+12	4156.4+x	J+10
978.5 4	0.876 19	4494.6+w	J5+10	3516.1+w	J5+8
979.2 7	0.93 <i>3</i>	4474.9+v	J4+10	3495.7+v	J4+8
982.4 <i>3</i>	0.980 19	5973.5+y	J1+14	4991.2+y	J1+12
1000.9 4	1.013 18	4581.8+u	J3+10	3580.9+u	J3+8

$\gamma(^{151}{\rm Gd})$

Continued on next page (footnotes at end of table)

			¹³⁰ Te(²	²⁶ Mg,5nγ):SI) 199	8ErZY,1999ErZZ (co
					151	
				2	/(¹³¹ Gd)	(continued)
E_{γ}	I_{γ}^{\dagger}	E _i (level)	\mathbf{J}_i^{π}	E_f	\mathbf{J}_f^{π}	
1004.2 6	0.993 22	6120.4+x	J+14	5116.2+x	J+12	-
1012.0 5	0.973 25	5294.6+z	J2+12	4282.6+z	J2+10	
1021.2 6	0.888 17	5515.7+w	J5+12	4494.6+w	J5+10	
1023.9 4	1.048 20	5498.7+v	J4+12	4474.9+v	J4+10	
1027.4 3	1.004 20	/001.0+y	J1+10 I2+12	59/3.5+y	J1+14 I2+10	
1045.95	1.028 18	5027.7 ± 0 7169 4 $\pm x$	J_{3+12} $I_{\pm 16}$	$4381.8 \pm u$ $6120.4 \pm x$	$J_{J}^{J}_{+10}$	
104.9.5	0.989 19	6580.6+w	J_{5+14}	5515.7+w	J_{1+1+1}	
1066.1 8	1.018 24	6360.7+z	J2+14	5294.6+z	J2+12	
1068.2 4	1.033 18	6566.9+v	J4+14	5498.7+v	J4+12	
1073.3 4	0.988 19	8074.3+y	J1+18	7001.0+y	J1+16	
1091.1 4	1.035 18	6718.8+u	J3+14	5627.7+u	J3+12	
1096.7 3	0.996 19	8266.1+x	J+18	7169.4+x	J+16	
1108.04	1.015 1/	/688./+W	J5+10 I4+16	6580.6+W	J5+14 I4+14	
1114.1 5	1.025 18	7081.0+V 9194 4+V	J_{1+10} J_{1+20}	$8074.3 \pm v$	J_{1+14} J_{1+18}	
1120.7 6	0.993 22	7481.4+z	J_{2+16}	6360.7+z	J_{2+14}	
1137.4 5	1.004 19	7856.2+u	J3+16	6718.8+u	J3+14	
1144.2 <i>3</i>	0.999 19	9410.3+x	J+20	8266.1+x	J+18	
1154.4 7	0.971 18	8843.1+w	J5+18	7688.7+w	J5+16	
1161.5 4	1.040 18	8842.6+v	J4+18	7681.0+v	J4+16	
1169.3 4	1.018 21	10363.7+y	J1+22	9194.4+y	J1+20	
11/5.5 9	1.042 22	8656.9+z	J2+18 J2+18	/481.4+z	J2+16	
1103.99	0.99 5	$9042.1 \pm u$ 10603 3±x	J_{3+10} I_{+22}	7830.2+u 9410 3+x	J_{3+10} I_{+20}	
1200.7.5	1.038 20	10003.3 + x 10043.8 + w	J_{15+20}	8843.1+w	J_{120}	
1209.8 8	0.968 23	10052.3 + v	J4+20	8842.6+v	J4+18	
1218.0 4	0.991 21	11581.7+y	J1+24	10363.7+y	J1+22	
1230.4 4	1.056 15	9887.3+z	J2+20	8656.9+z	J2+18	
1236.1 5	0.983 21	10278.2+u	J3+20	9042.1+u	J3+18	
1243.1 4	0.98 2	11846.4+x	J+24	10603.3+x	J+22	
1249.3 3	1.026 20	11293.1+W	J5+22 I4+22	10043.8+W	J5+20 I4+20	
1201.5 5	1.011 19	11313.0+v 12850 3+v	J_{4+22} I_{1+26}	10032.3 ± 0 11581 7 ± 0	J_{1+20} I_{1+24}	
1286.1 4	0.983 19	11564.3+u	J3+22	10278.2+u	J_{3+20}	
1286.7 4	0.968 14	11174.0+z	J2+22	9887.3+z	J2+20	
1294.6 6	0.993 22	13141.0+x	J+26	11846.4+x	J+24	
1299.2 8	1.027 15	12592.3+w	J5+24	11293.1+w	J5+22	
1312.5 5	0.968 19	12626.1+v	J4+24	11313.6+v	J4+22	
1320.4 4	1.035 20	141/0.7+y	J1+28 J2+24	12850.3+y	J1+26	
1337.54 134274	0.987 18	12901.9+u 12516 7+z	J_{3+24} J_{2+24}	11304.3+u 11174.0+z	J_{3+22} J_{2+22}	
1346.4.4	0.845 14	12310.7 ± 2 14487 4+x	$J_2 + 2_4$ $I_+ 28$	13141.0+z	J_{2+22} I+26	
1349.8 9	0.957 24	13942+w	J5+26	12592.3+w	J5+24	
1363.2 6	0.989 19	13989.3+v	J4+26	12626.1+v	J4+24	
1372.6 4	0.918 20	15543.3+y	J1+30	14170.7+y	J1+28	
1388.7 4	0.848 19	14290.6+u	J3+26	12901.9+u	J3+24	
1399.1 4	0.828 19	15886.5+x	J+30	14487.4+x	J+28	
1399.4 4	0.792 14	13916.1+z	J2+26	12516.7+z	J2+24	
1400.7 12 1416 7 6	0.970 23	13343+W 15406 0 I V	J3+28 J4±28	13942+W 13080 2 i m	J3+20 I4±26	
1426.0.5	0.810 20	$169693 \pm v$	J++∠o I1+32	15543 3+v	J_{++20} I_{+30}	
1443.4 6	0.662 17	15734.0+u	J3+28	14290.6+u	J3+26	
1451.8 16	0.785 19	16795+w	J5+30	15343+w	J5+28	
1452.6 5	0.750 19	17339.1+x	J+32	15886.5+x	J+30	
1456.3 5	0.718 14	15372.4+z	J2+28	13916.1+z	J2+26	
1469.6 15	0.543 21	16875.6+v	J4+30	15406.0+v	J4+28	

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			16(Mg,5117).5	D 199	6EIZI ,1999E
					$\gamma(^{151}\text{Gd})$	(continued)
Eγ	I_{γ}^{\dagger}	E _i (level)	\mathbf{J}_i^{π}	E_f	\mathbf{J}_f^{π}	
1479.7 5	0.552 18	18449.0+y	J1+34	16969.3+y	J1+32	
1497.8 <i>12</i>	0.544 21	17231.8+u	J3+30	15734.0+u	J3+28	
1505.0 15	0.478 18	18300+w	J5+32	16795+w	J5+30	
1507.2 4	0.440 17	18846.3+x	J+34	17339.1+x	J+32	
1513.4 5	0.563 13	16885.8+z	J2+30	15372.4+z	J2+28	
1524.0 15	0.444 17	18400+v	J4+32	16875.6+v	J4+30	
1534.4 7	0.421 18	19983.5+y	J1+36	18449.0+y	J1+34	
1551.5 15	0.398 21	18783+u	J3+32	17231.8+u	J3+30	
1555.3 18	0.186 17	19855+w	J5+34	18300+w	J5+32	
1562.0 5	0.290 16	20408.3+x	J+36	18846.3+x	J+34	
1570.0 5	0.428 13	18455.8+z	J2+32	16885.8+z	J2+30	
1580.5 17	0.236 16	19980+v	J4+34	18400+v	J4+32	
1589.5 10	0.326 20	21573.0+y	J1+38	19983.5+y	J1+36	
1606.2 17	0.329 18	20390+u	J3+34	18783+u	J3+32	
1617.8 7	0.240 15	22026.2+x	J+38	20408.3+x	J+36	
1627.7 6	0.225 12	20083.5+z	J2+34	18455.8+z	J2+32	
1635.2 18	0.149 14	21615+v	J4+36	19980+v	J4+34	
1645.3 11	0.117 15	23218+y	J1+40	21573.0+y	J1+38	
1674.8 9	0.100 13	23701.0+x	J+40	22026.2+x	J+38	
1685.6 9	0.135 12	21769+z	J2+36	20083.5+z	J2+34	
1700.8 13	0.063 14	24919+y	J1+42	23218+y	J1+40	
1742.9 11	0.052 11	23512 + z	J_{2+38}	21769 + z	J2+36	

[†] Relative intensities within each band. Values are from 1999ErZZ. Similar values in graphical format are given in 1998ErZY.

	Legend
<u>Level Scheme</u> Intensities: Relative I_{γ}	$\begin{array}{c c} & I_{\gamma} < 2\% \times I_{\gamma}^{max} \\ & I_{\gamma} < 10\% \times I_{\gamma}^{max} \\ & I_{\gamma} > 10\% \times I_{\gamma}^{max} \end{array}$

J5+34		19855+w
15+22		18200 + 32
<u>JJ+32</u>		18300+w
J5+30		16795+w
J5+28	<u> </u>	15343+w
J5+26	<u>v</u>	13942+w
<u>J5+24</u>		12592.3+w
J5+22	<u> </u>	11293.1+w
J5+20	<u>+ ² ² ² ² </u>	10043.8+w
J5+18		8843.1+w
J5+16	, , , , , , , , , , , , , , , , , , ,	7688.7+w
<u>J5+14</u>		6580.6+w
J5+12		5515.7+w
<u>J5+10</u>	↓&&	4494.6+w
<u>J5+8</u> 15+6	*\$\$\$\$\$	2577 7+w
J5+4		1677.9+w
J5+2		817.8+w
$\frac{J5\approx(61/2^{-})}{1000}$		w
<u>J4+36</u> I4+34		<u>21615+v</u>
J4+32		18400+v
I4+30		16875 6+v
14.00		15406.01
J4+28		15406.0+v
J4+26		13989.3+v
J4+24		12626.1+v
J4+22		11313.6+v
J4+20		10052.3+v
J4+18		8842.6+v
J4+16		7681.0+v
J4+14		6566.9+v
J4+12		5498.7+v
J4+10	↓ , , , , , , , , , , , , , , , ,	4474.9+v
J4+8	<u> </u>	3495.7+v
J4+6	<u> </u>	2558.1+v
<u>J4+4</u>		<u>1662.8+v</u>
$\frac{J4+2}{I4\approx(63/2^{-})}$	-/¥_&?	<u> </u>
<u>I3+34</u>		20390+u
J3+32		18783+u
J3+30		17231.8+u
J3+28		15734.0+u

 $^{151}_{64}\rm{Gd}_{87}$



 $^{151}_{64}\text{Gd}_{87}$

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 $^{151}_{64}\text{Gd}_{87}$

Band(a): SD-2 band

J1+42		24919+y
J1+40	1701	23218+y
J1+38	1645	21573.0+y
J1+36	1590	19983.5+y
J1+34	1534	18449.0+y
J1+32	1480	16969.3+y
J1+30	1426	15543.3+y
J1+28	1373	14170.7+y
J1+26	1320	12850.3+y
J1+24	1269	11581.7+y
J1+22	1218	10363.7+y
J1+20	1169	9194.4+y
J1+18	1120	8074.3+y
J1+16	1073	7001.0+y
J1+14	1027	5973.5+y
J1+12	982	4991.2+y
J1+10	939	4052.4+y
J1+8	895	3157.0+y
J1+6	853	2304.4+y
J1+4	810	
J1+2	768	725.5+y
J1≈(55/2 ⁺)	726	у

Band(A): SD-1 band

J+40		23701.0+x
J+38	167	5 22026.2+x
J+36	1618	⁸ 20408.3+x
J+34	1562	² 18846.3+x
J+32	150	⁷ 17339.1+x
J+30	145	³ 15886.5+x
J+28	139	9 14487.4+x
J+26	134	⁶ 13141.0+x
J+24	129	5 11846.4+x
J+22	124	³ 10603.3+x
J+20	119	³ 9410.3+x
J+18	114	4 8266.1+x
J+16	109	7 7169.4+x
J+14	1049	9 6120.4+x
J+12	1004	4 5116.2+x
J+10	960	4156.4+x
J+8	916	3240.1+x
J+6	874	2366.6+x
J+4	831	1535.3+x
J+2	789	746.4+x
J≈(57/2 ⁺)	746	x

¹⁵¹₆₄Gd₈₇

Band(c): SD-5 band

J4+36		21615+v
J4+34	1635	19980+v
J4+32	1580	18400+v
J4+30	1524	16875.6+v
J4+28	1470	15406.0+v
J4+26	1 1 2	<u></u>
J4+24	1417	12626.1+v
J4+22	1363	11313.6+v
J4+20	1312	10052.3+v
J4+18	1261	8842.6+v
J4+16	1210	7 <u>681.0+v</u>
J4+14	1162	¢566.9+v
J4+12	1114	5 498.7+v
J4+10	1068	4474.9+v
J4+8	1024	3495.7+v
J4+6	979	2558.1+v
J4+4	938	1662.8+v
14+2	895	
142/69/9-	854	
J4≈(03/2	/ 809	V

Band(C): SD-4 band

J3+34		20390+u
J3+32	1606	18783+u
J3+30	1552	17231.8+u
J3+28	1498	15734.0+u
J3+26	1443	14290.6+u
J3+24	1280	12901.9+u
J3+22	1369	-11564.3+u
J3+20	1338	10278.2+u
J3+18	1286	9042.1+u
J3+16	1236	7856.2+u
J3+14	1186	¢718.8+u
J3+12	1137	\$627.7+u
J3+10	1091	4581.8+u
J3+8	1046	3580.9+u
J3+6	1001	2622.6+u
J3+4	958	1706.8+u
J4+2	916	⁄832.8+u
J3≈(65/2-)	833	u

Band(B): SD-3 band

J2+38		23512+z
J2+36	1743	21769+z
J2+34	1686	20083.5+z
J2+32	1628	18455.8+z
J2+30	1570	16885.8+z
J2+28	1513	15372.4+z
J2+26	1450	-13916.1+z
J2+24	1450	12516.7+z
J2+22	1399	1/174.0+z
J2+20	1343	9887.3+z
J2+18	1287	\$656.9+z
J2+16	1230	7481.4+z
J2+14	1176	6360.7+z
J2+12	1121	5 294.6+z
J2+10	1121	4282.6+z
J2+8	1010	
J2+6	050	2417.2+z
12+4	907	1561 3+7
12.2	856	
	806	/ <u>55.7+z</u>
J2≈(5 9/2[−])	756	z

 $^{151}_{64}\text{Gd}_{87}$



¹⁵¹₆₄Gd₈₇