

**<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh		NDS 181, 1 (2022)	9-Mar-2022

Parent: <sup>147</sup>Gd: E=8588.07 17; J<sup>π</sup>=49/2<sup>+</sup>; T<sub>1/2</sub>=516 ns 20; %IT decay=100.0

<sup>147</sup>Gd-T<sub>1/2</sub>: From Adopted Levels.

2020Br06 compiled for xundl database by J. Chen (NSCL, MSU) and B. Singh (McMaster).

2020Br06: <sup>147</sup>Gd produced via <sup>76</sup>Ge(<sup>76</sup>Ge,5n) reaction with E=290 MeV <sup>76</sup>Ge beam at the Tandem-ALPI accelerators on self-supporting 0.8 mg/cm<sup>2</sup>, 99% enriched <sup>76</sup>Ge target, with prompt γ rays emitted directly from the target shielded from the GASP array by Pb cylinder. Recoiling reaction products were collected in 99.9% enriched <sup>208</sup>Pb catcher surrounded by GASP array of 40 Compton suppressed HPGe detectors. Measured Eγ, Iγ, γγ-coin, γγγ-coin. Deduced levels, J, π, γ-ray conversion coefficients, multipolarities.

1987Da27: <sup>124</sup>Sn(<sup>28</sup>Si,5nγ), E=108 MeV. Measured γ(θ,H,t). Used Compton-suppressed HPGe detectors. Deduced g factor (time dependent perturbed angular distribution).

1985Da20: <sup>124</sup>Sn(<sup>28</sup>Si,5nγ), E=120, 144 MeV. Measured γ(θ,H,t). Used multifoil arrays, pulsed beam, Ge(Li) detectors. Deduced nuclear polarization, average atomic spin, polarization, sign of Q.

1982Ba46: (<sup>16</sup>O,4nγ) and (<sup>28</sup>Si,5nγ) reactions. Report data and decay scheme from 27-ns 3582 level up to the 510-ns state at 8588 keV; measured γγ, γ(θ) and ce(K); pulsed beam, Ge(Li), Si(Li) detectors, NaI(Tl) array, mini-orange spectrometer.

1982Br13: (<sup>12</sup>C,5n) and (α,5n) reactions. Report data and decay scheme from the g.s. up to the 510-ns measured isomeric state at 8588 MeV; γ, γγ, γ(θ).

1982Ha22: <sup>124</sup>Sn(<sup>28</sup>Si,5nγ), E=108-144 MeV. γ(θ,H,t) vs. T. Used pulsed beam, Ge(Li) detectors, recoil implantation into Gd.

Deduced Q (time dependent perturbed angular distribution, tilted foil time differential perturbed γ angular correlation), deformation.

1979Ha15: <sup>124</sup>Sn(<sup>28</sup>Si,5nγ), E=108-144 MeV and <sup>144</sup>Sm(α,nγ), E=30 MeV. Used enriched targets, pulsed beam, Ge(Li) detectors, paramagnetic correction. Measured γγ(θ,H,t). Deduced T<sub>1/2</sub>, g factor (time dependent perturbed angular distribution), configuration.

1979Fa01: <sup>124</sup>Sn(<sup>28</sup>Si,5nγ), E=119, 132 MeV. Measured γ(θ,H,t). Used enriched targets, pulsed beam, Ge(Li) detectors. Deduced g factor (time dependent perturbed angular distribution).

Others: 2007Po13, 2005St24, 1989Ra17, 1979TaZ0, 1979K104, 1979TaZ0, 1981Ha17, 1982Ha22, 1983BrZV, 2007Po13.

The decay scheme is that of 2020Br06 who largely confirm that of 1982Ba46 and 1982Ba46.

<sup>147</sup>Gd Levels

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	T <sub>1/2</sub>	Comments
0.0	7/2 <sup>-</sup>		
997.10 10	13/2 <sup>+</sup>	22.2 ns 15	g=+0.075 3 (1987Da27); μ=+0.49 2 (2020StZV) Q=-0.70 8 (2016St14) β <sub>2</sub> =-0.05 (1982Ha22). T <sub>1/2</sub> : adopted value. Measured in this dataset: 22.2 ns 15 (1979Ha15). g,μ: based on g factor measured by 1987Da27 Other: g factor=-0.037 11 (1979Ha15), μ=-0.24 7 (adopted by 1987Da27 compilation based on 1987Da27). 1987Da27 argue that they used improved technique compared to conventional laboratory magnetic field of 1979Ha15. Q: absolute value measured by 1982Ha22; sign deduced by 1985Da20.
2488.18 13	17/2 <sup>+</sup>		
2572.15 13	19/2 <sup>-</sup>		
2760.27 14	21/2 <sup>+</sup>	5 ns 1	g=+0.72 11 (1979Ha15); μ=+7.6 12 (1987Da27) T <sub>1/2</sub> : from 1979Ha15. g,μ: deduced by 1987Da27 compilation based on g factor measured by 1987Da27.
3038.01 16	23/2 <sup>+</sup>		
3186.20 16	23/2 <sup>+</sup>		
3398.79 16	25/2 <sup>+</sup>		
3509.96 16	23/2 <sup>-</sup>		
3581.72 15	27/2 <sup>-</sup>	26.8 ns 7	g=0.840 17 (1979Ha15); μ=+11.3 2 (1987Da27) Q=-1.21 9 (2016St14)

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$^{147}\text{Gd}$  IT decay (516 ns) 2020Br06,1982Ba46,1982Br13 (continued) $^{147}\text{Gd}$  Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	Comments
		T <sub>1/2</sub> : from 1979Ha15.
		β <sub>2</sub> =-0.06 (1982Ha22).
		gμ: deduced by 1987Da27 based on g factor measured by 1979Ha15.
		g: other: 0.884 25 (1979Fa01).
		μ: other: +11.9 3 (adopted by 2014StZZ based on 1979Fa01).
		Q: absolute value measured by 1982Ha22; sign deduced by 1985Da20.
3691.74 16	25/2 <sup>-</sup>	
4006.71 16	27/2 <sup>-</sup>	
4070.09 16	27/2 <sup>-</sup>	
4211.35 17	27/2 <sup>-</sup>	
4229.79 16	29/2 <sup>-</sup>	
4337.95 18	27/2 <sup>-</sup>	
4450.72 16	29/2 <sup>-</sup>	
4533.45 16	29/2 <sup>-</sup>	
4617.85 16	29/2 <sup>+</sup>	
4843.79 16	31/2 <sup>-</sup>	
4948.63 16	31/2 <sup>+</sup>	
4971.71 16	31/2 <sup>-</sup>	
5029.10 16	33/2 <sup>+</sup>	
5118.09 17	29/2 <sup>-</sup>	
5265.00 16	31/2 <sup>-</sup>	
5272.23 17	31/2 <sup>-</sup>	
5382.13 16	33/2 <sup>-</sup>	
5439.13 17	31/2 <sup>-</sup>	
5582.99 16	35/2 <sup>-</sup>	
5622.23 17	33/2 <sup>+</sup>	
5652.56 16	33/2 <sup>-</sup>	
5742.30 16	33/2 <sup>+</sup>	
5767.45 16	35/2 <sup>-</sup>	
5770.97 23	33/2 <sup>-</sup>	
5923.00 16	37/2 <sup>-</sup>	
5959.42 17	35/2 <sup>-</sup>	
6012.80 16	35/2 <sup>+</sup>	
6081.48 17	35/2 <sup>-</sup>	
6181.27 17	35/2 <sup>+</sup>	
6315.87 16	37/2 <sup>+</sup>	
6322.17 17	35/2 <sup>+</sup>	
6373.23 18	37/2 <sup>-</sup>	
6463.91 16	37/2 <sup>+</sup>	
6471.46 16	39/2 <sup>-</sup>	
6567.89 16	37/2 <sup>+</sup>	
6621.32 16	39/2 <sup>+</sup>	
6658.22 17	39/2 <sup>-</sup>	
6697.28 16	37/2 <sup>+</sup>	
6721.23 17	37/2 <sup>-</sup>	
6723.18 17	39/2 <sup>-</sup>	
6833.58 17	37/2 <sup>-</sup>	
6838.61 16	39/2 <sup>+</sup>	
6894.69 16	39/2 <sup>+</sup>	
6906.82 16	41/2 <sup>+</sup>	
6936.83 16	39/2 <sup>+</sup>	
7018.18 21	39/2 <sup>-</sup>	
7035.34 16	41/2 <sup>+</sup>	
7124.46 18	39/2 <sup>-</sup>	
7126.75 17	39/2 <sup>-</sup>	
7182.84 17	39/2 <sup>+</sup>	

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$^{147}\text{Gd}$  IT decay (516 ns) [2020Br06](#),[1982Ba46](#),[1982Br13](#) (continued) $^{147}\text{Gd}$  Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	T <sub>1/2</sub>	Comments
7212.67 17	41/2 <sup>-</sup>		
7275.45 17	41/2 <sup>-</sup>		
7307.72 17	39/2 <sup>-</sup>		
7352.50 17	41/2 <sup>+</sup>		
7386.14 17	37/2 <sup>-</sup>		
7389.40 17	43/2 <sup>+</sup>		
7396.18 16	41/2 <sup>+</sup>		
7530.94 17	41/2 <sup>+</sup>		
7596.10 16	39/2 <sup>-</sup>		
7619.79 17	41/2 <sup>+</sup>		
7645.97 17	39/2 <sup>-</sup>		
7666.31 17	41/2 <sup>-</sup>		
7669.68 17	39/2 <sup>-</sup>		
7692.11 19	41/2 <sup>+</sup>		
7705.92 17	39/2 <sup>-</sup>		
7718.56 17	39/2 <sup>-</sup>		
7768.69 19	39/2 <sup>-</sup>		
7771.94 17	43/2 <sup>+</sup>		
7800.35 17	39/2 <sup>-</sup>		
7801.42 16	41/2 <sup>-</sup>		
7825.71 16	41/2 <sup>-</sup>		
7874.04 16	41/2 <sup>-</sup>		
7903.57 17	41/2 <sup>-</sup>		
7917.09 18	41/2 <sup>-</sup>		
7964.00 16	43/2 <sup>-</sup>		
7994.30 16	43/2 <sup>-</sup>		
8097.17 17	43/2 <sup>+</sup>		
8126.03 17	43/2 <sup>+</sup>		
8153.49 17	45/2 <sup>+</sup>		
8333.44 16	45/2 <sup>+</sup>		
8588.07 17	49/2 <sup>+</sup>	516 ns 20	g=0.446 8 ( <a href="#">1979Ha15</a> ); μ=+10.9 2 ( <a href="#">2020StZV</a> ) Q=-3.00 18 ( <a href="#">2016St14</a> ) T <sub>1/2</sub> : weighted average of 510 ns 20 ( <a href="#">1982Ha22</a> ) and 530 ns 30 ( <a href="#">1979Ha15</a> ), 516 ns 17 (adopted with minimum experimental uncertainty). Others: 560 ns 60 ( <a href="#">1978Br15</a> ), 550 ns ( <a href="#">1982Ba46</a> ). Proposed configuration= $\pi(d_{5/2}^{-2}h_{11/2}^2)_{10} \otimes \nu(h_{11/2}^{-1}i_{13/2}f_{7/2})_{29/2}$ , with large oblate deformation. $\beta_2=-0.19$ ( <a href="#">1982Ha22</a> ). g,μ: deduced by <a href="#">2020StZV</a> compilation based on g factor measured by <a href="#">1979Ha15</a> . Q: absolute value measured by <a href="#">1982Ha22</a> ; sign deduced by <a href="#">1985Da20</a> . J <sup>π</sup> : 47/2 <sup>+</sup> is considered equally likely as 49/2 <sup>+</sup> by <a href="#">1982Ha22</a> (from $\gamma(\theta,H,t)$ ).

<sup>†</sup> From a least-squares fit to  $\gamma$ -ray energies. Reduced  $\chi^2=0.77$ , with only one  $\gamma$ -ray poorly fitted.

<sup>‡</sup> As given in [2020Br06](#).

$\gamma(^{147}\text{Gd})$

Mentioned in the table are five  $\gamma$  rays the multipolarities of which were changed in an e-mail reply from R. Broda to B. Singh from August 16, 2020.

$E_\gamma$ <sup>†‡</sup>	$I_\gamma$ <sup>†h</sup>	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.#	$\alpha^i$	Comments
(12.1 <sup>f</sup> )	0.024 <sup>f</sup> 1	6906.82	41/2 <sup>+</sup>	6894.69	39/2 <sup>+</sup>	[M1]	158.1	
(30.4 <sup>f</sup> )	0.65 <sup>f</sup> 8	7994.30	43/2 <sup>-</sup>	7964.00	43/2 <sup>-</sup>	[M1]	10.24	
(48.3 <sup>f</sup> )	0.64 <sup>f</sup> 9	7874.04	41/2 <sup>-</sup>	7825.71	41/2 <sup>-</sup>	M1	2.61	
57.4 3	0.15 1	5029.10	33/2 <sup>+</sup>	4971.71	31/2 <sup>-</sup>	[E1]	1.271 25	
68.0 1	0.08 2	6906.82	41/2 <sup>+</sup>	6838.61	39/2 <sup>+</sup>	M1 &	6.12	$\alpha(\text{exp})=5\ 2$ ( <a href="#">2020Br06</a> )
71.8 <sup>f</sup> 1	0.10 <sup>f</sup> 2	3581.72	27/2 <sup>-</sup>	3509.96	23/2 <sup>-</sup>	[E2]	8.80	
72.7 1	1.4 3	7874.04	41/2 <sup>-</sup>	7801.42	41/2 <sup>-</sup>	M1 &	5.05	$\alpha(\text{exp})=6\ 2$ ( <a href="#">2020Br06</a> )
73.7 3	0.03 1	7669.68	39/2 <sup>-</sup>	7596.10	39/2 <sup>-</sup>	[M1]	4.85 9	
73.7 1	0.18 6	7874.04	41/2 <sup>-</sup>	7800.35	39/2 <sup>-</sup>	M1 &	4.85	$\alpha(\text{exp})=5\ 3$ ( <a href="#">2020Br06</a> )
(77.2 <sup>f</sup> 3)	0.04 <sup>f</sup> 1	7994.30	43/2 <sup>-</sup>	7917.09	41/2 <sup>-</sup>	[M1]	4.24 8	
80.4 1	4.33 46	5029.10	33/2 <sup>+</sup>	4948.63	31/2 <sup>+</sup>	M1 & a	3.77	$\alpha(\text{exp})=4.1\ 5$ ( <a href="#">2020Br06</a> ) Mult.: $A_2=-0.19\ 10$ ( <a href="#">1982Ba46</a> ).
83.9 1	6.31 24	2572.15	19/2 <sup>-</sup>	2488.18	17/2 <sup>+</sup>	[E1]	0.468	
90.8 1	0.09 2	7994.30	43/2 <sup>-</sup>	7903.57	41/2 <sup>-</sup>	[M1]	2.66	
105.5 3	0.04 2	7874.04	41/2 <sup>-</sup>	7768.69	39/2 <sup>-</sup>	(M1) &	1.73 3	$\alpha(\text{exp})=2.9\ 14$ ( <a href="#">2020Br06</a> )
109.0 3	0.11 3	7801.42	41/2 <sup>-</sup>	7692.11	41/2 <sup>+</sup>	[E1]	0.232	
110.0 1	2.65 17	3691.74	25/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	M1 &	1.533	$\alpha(\text{exp})=1.9\ 5$ ( <a href="#">2020Br06</a> ) Mult.: $A_2=-0.21\ 5, A_4=0.00\ 6$ ( <a href="#">1982Br13</a> ).
117.2 1	17.8 7	5382.13	33/2 <sup>-</sup>	5265.00	31/2 <sup>-</sup>	M1 & ab	1.279	$\alpha(\text{exp})=1.20\ 15$ ( <a href="#">2020Br06</a> ) $\alpha(\text{K})\text{exp}=1.3\ 5$ ( <a href="#">1982Ba46</a> ) Mult.: $A_2=0.13\ 2, A_4=0.00\ 3$ ( <a href="#">1982Br13</a> ). Mult.: $A_2=-0.10\ 3$ ( <a href="#">1982Ba46</a> ).
119.8 3	0.08 4	7825.71	41/2 <sup>-</sup>	7705.92	39/2 <sup>-</sup>	[M1]	1.202 19	
120.2 1	22.3 17	7994.30	43/2 <sup>-</sup>	7874.04	41/2 <sup>-</sup>	M1 &	1.191	$\alpha(\text{exp})=1.05\ 18$ ( <a href="#">2020Br06</a> )
140.6 1	0.17 2	7035.34	41/2 <sup>+</sup>	6894.69	39/2 <sup>+</sup>	[M1]	0.764	
146.8 2	0.28 3	5265.00	31/2 <sup>-</sup>	5118.09	29/2 <sup>-</sup>	[M1]	0.677	
155.5 3	0.06 2	6471.46	39/2 <sup>-</sup>	6315.87	37/2 <sup>+</sup>	[E1]	0.0888 14	
155.5 1	0.15 3	7874.04	41/2 <sup>-</sup>	7718.56	39/2 <sup>-</sup>	M1 &	0.576	$\alpha(\text{exp})=0.9\ 3$ ( <a href="#">2020Br06</a> )
157.5 1	1.45 7	6621.32	39/2 <sup>+</sup>	6463.91	37/2 <sup>+</sup>	(M1) &	0.555	$\alpha(\text{exp})=0.6\ 2$ ( <a href="#">2020Br06</a> ) Mult.: $A_2=0.10\ 19, A_4=-0.08\ 25$ ( <a href="#">1982Br13</a> ).
159.7 1	8.04 23	4229.79	29/2 <sup>-</sup>	4070.09	27/2 <sup>-</sup>	M1 &	0.534	$\alpha(\text{exp})=0.54\ 4$ ( <a href="#">2020Br06</a> ) Mult.: $A_2=-0.15\ 2, A_4=0.01\ 3$ ( <a href="#">1982Br13</a> ).
162.4 3	0.09 4	7964.00	43/2 <sup>-</sup>	7801.42	41/2 <sup>-</sup>	[M1]	0.510	
168.2 3	0.04 1	7874.04	41/2 <sup>-</sup>	7705.92	39/2 <sup>-</sup>	M1 &	0.462	$\alpha(\text{exp})=0.6\ 3$ ( <a href="#">2020Br06</a> )

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.#	$\alpha^i$	Comments
168.6 2	0.13 3	6181.27	35/2 <sup>+</sup>	6012.80	35/2 <sup>+</sup>	[M1]	0.459	
168.6 1	2.67 11	7994.30	43/2 <sup>-</sup>	7825.71	41/2 <sup>-</sup>	[M1]	0.459	
<sup>x</sup> 171.8 5	3.0							
173.4 1	0.13 3	6894.69	39/2 <sup>+</sup>	6721.23	37/2 <sup>-</sup>	[E1]	0.0663	
177.0 3	0.20 6	7389.40	43/2 <sup>+</sup>	7212.67	41/2 <sup>-</sup>	[E1]	0.0628	
179.8 1	0.14 3	8333.44	45/2 <sup>+</sup>	8153.49	45/2 <sup>+</sup>	[M1]	0.384	
181.8 2	1.21 33	3691.74	25/2 <sup>-</sup>	3509.96	23/2 <sup>-</sup>	[M1]	0.373	
182.9 1	67.0 20	3581.72	27/2 <sup>-</sup>	3398.79	25/2 <sup>+</sup>	E1 <sup>c</sup>	0.0575	Mult.: A <sub>2</sub> =-0.15 1, A <sub>4</sub> =0.00 1 (1982Br13).
185.2 3	0.64 9	5029.10	33/2 <sup>+</sup>	4843.79	31/2 <sup>-</sup>	[E1]	0.0557	
188.1 1	15.5 8	2760.27	21/2 <sup>+</sup>	2572.15	19/2 <sup>-</sup>	D <sup>b</sup>		Mult.: A <sub>2</sub> =-0.14 2, A <sub>4</sub> =-0.01 2 (1982Br13).
192.2 3	0.10 3	6373.23	37/2 <sup>-</sup>	6181.27	35/2 <sup>+</sup>	[E1]	0.0504	
192.9 1	3.23 17	7994.30	43/2 <sup>-</sup>	7801.42	41/2 <sup>-</sup>	D <sup>b</sup>		Mult.: A <sub>2</sub> =-0.18 12, A <sub>4</sub> =0.07 15 (1982Br13).
193.9 5	0.02 1	7994.30	43/2 <sup>-</sup>	7800.35	39/2 <sup>-</sup>	[E2]	0.246	
196.6 1	0.51 3	7035.34	41/2 <sup>+</sup>	6838.61	39/2 <sup>+</sup>	[M1]	0.300	
200.7 1	47.0 22	5582.99	35/2 <sup>-</sup>	5382.13	33/2 <sup>-</sup>	M1 <sup>&amp;ab</sup>	0.284	$\alpha(\text{exp})=0.34$ 8 (2020Br06) $\alpha(\text{K})\text{exp}=0.22$ 6 (1982Ba46) Mult.: A <sub>2</sub> =0.30 7, A <sub>4</sub> =-0.06 9 (1982Br13). Mult.: A <sub>2</sub> =-0.18 3 (1982Ba46).
204.4 1	0.91 9	7874.04	41/2 <sup>-</sup>	7669.68	39/2 <sup>-</sup>	(M1) <sup>&amp;</sup>	0.270	$\alpha(\text{exp})=0.22$ 6 (2020Br06)
205.4 3	0.30 4	7801.42	41/2 <sup>-</sup>	7596.10	39/2 <sup>-</sup>	[M1]	0.266	
207.4 1	2.98 11	8333.44	45/2 <sup>+</sup>	8126.03	43/2 <sup>+</sup>	M1 <sup>&amp;</sup>	0.259	$\alpha(\text{exp})=0.27$ 6 (2020Br06)
207.7 1	0.83 6	7874.04	41/2 <sup>-</sup>	7666.31	41/2 <sup>-</sup>	M1 <sup>&amp;</sup>	0.258	$\alpha(\text{exp})=0.38$ 15 (2020Br06)
<sup>x</sup> 208.3 <sup>j</sup> 4	≈2.5					D <sup>b</sup>		$E_\gamma, I_\gamma$ : placed at 7035 level by 1982Br13 only, not confirmed by 2020Br06. Mult.: A <sub>2</sub> =-0.32 15, A <sub>4</sub> =0.10 20 (1982Br13).
212.6 3	0.13 4	3398.79	25/2 <sup>+</sup>	3186.20	23/2 <sup>+</sup>	[M1]	0.242	
213.3 2	0.12 2	5652.56	33/2 <sup>-</sup>	5439.13	31/2 <sup>-</sup>	[M1]	0.240	
223.0 1	2.68 8	4229.79	29/2 <sup>-</sup>	4006.71	27/2 <sup>-</sup>	D <sup>b</sup>		Mult.: A <sub>2</sub> =-0.23 7, A <sub>4</sub> =0.05 8 (1982Br13).
228.1 1	0.73 6	7874.04	41/2 <sup>-</sup>	7645.97	39/2 <sup>-</sup>	M1 <sup>&amp;</sup>	0.200	$\alpha(\text{exp})=0.25$ 7 (2020Br06)
229.7 1	0.49 7	7825.71	41/2 <sup>-</sup>	7596.10	39/2 <sup>-</sup>	[M1]	0.196	
236.1 2	0.23 4	5265.00	31/2 <sup>-</sup>	5029.10	33/2 <sup>+</sup>	[E1]	0.0294	
236.2 1	0.82 2	8333.44	45/2 <sup>+</sup>	8097.17	43/2 <sup>+</sup>	[M1]	0.182	
239.6 1	1.03 7	6936.83	39/2 <sup>+</sup>	6697.28	37/2 <sup>+</sup>	[M1]	0.1748	
245.8 5	0.06 3	6012.80	35/2 <sup>+</sup>	5767.45	35/2 <sup>-</sup>	[E1]	0.0265	
247.3 2	0.11 3	7917.09	41/2 <sup>-</sup>	7669.68	39/2 <sup>-</sup>	[M1]	0.1605	
248.1 2	0.39 7	6621.32	39/2 <sup>+</sup>	6373.23	37/2 <sup>-</sup>	[E1]	0.0258	
248.4 1	0.50 6	6906.82	41/2 <sup>+</sup>	6658.22	39/2 <sup>-</sup>	[E1]	0.0258	
254.4 <sup>g</sup> 1	82.8 25	8588.07	49/2 <sup>+</sup>	8333.44	45/2 <sup>+</sup>	E2 <sup>&amp;ab</sup>	0.1011	$\alpha(\text{K})\text{exp}=0.075$ 14 (1982Ba46) $\alpha(\text{exp})=0.12$ 3 (2020Br06) Mult.: A <sub>2</sub> =0.13 4, A <sub>4</sub> =-0.03 5 (1982Br13). Mult.: A <sub>2</sub> =0.165 12 (1982Ba46).
264.0 1	0.23 3	5382.13	33/2 <sup>-</sup>	5118.09	29/2 <sup>-</sup>	[E2]	0.0899	Mult.: M1 in Table III of 2020Br06 is a misprint, as confirmed in e-mail reply from R. Broda.

5

<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13 (continued)

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.#	$\delta$	$\alpha^i$	Comments
270.4 1	1.63 13	6012.80	35/2 <sup>+</sup>	5742.30	33/2 <sup>+</sup>	[M1]		0.1262	
272.1 1	76.7 33	2760.27	21/2 <sup>+</sup>	2488.18	17/2 <sup>+</sup>	E2 <sup>b</sup>		0.0817	Mult.: A <sub>2</sub> =0.22 1, A <sub>4</sub> =-0.07 1 (1982Br13).
277.8 1	79.6 33	3038.01	23/2 <sup>+</sup>	2760.27	21/2 <sup>+</sup>	M1+E2 <sup>d</sup>	0.1	0.1169	Mult.: A <sub>2</sub> =-0.07 1, A <sub>4</sub> =0.01 1 (1982Br13).
278.0 1	0.17 9	7874.04	41/2 <sup>-</sup>	7596.10	39/2 <sup>-</sup>	[M1]		0.1171	
279.6 3	0.06 2	4617.85	29/2 <sup>+</sup>	4337.95	27/2 <sup>-</sup>	[E1]		0.0190	
282.6 1	0.83 9	6463.91	37/2 <sup>+</sup>	6181.27	35/2 <sup>+</sup>	[M1]		0.1121	
283.5 1	0.11 2	7669.68	39/2 <sup>-</sup>	7386.14	37/2 <sup>-</sup>	[M1]		0.1112	
285.2 3	0.53 7	6658.22	39/2 <sup>-</sup>	6373.23	37/2 <sup>-</sup>	[M1]		0.1094	
285.4 1	11.4 4	6906.82	41/2 <sup>+</sup>	6621.32	39/2 <sup>+</sup>	M1 <sup>&amp;ab</sup>		0.1092	$\alpha(\text{K})_{\text{exp}}=0.075$ 16 (1982Ba46) $\alpha(\text{exp})=0.10$ 3 (2020Br06) Mult.: A <sub>2</sub> =-0.18 3, A <sub>4</sub> =0.02 5 (1982Br13). Mult.: A <sub>2</sub> =-0.20 3 (1982Ba46).
288.3 1	0.17 6	7994.30	43/2 <sup>-</sup>	7705.92	39/2 <sup>-</sup>	[E2]		0.0682	
291.9 3	0.10 3	6373.23	37/2 <sup>-</sup>	6081.48	35/2 <sup>-</sup>	[M1]		0.1028	
293.0 2	0.50 6	3691.74	25/2 <sup>-</sup>	3398.79	25/2 <sup>+</sup>	[E1]		0.01690	
293.0 3	0.10 3	5265.00	31/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	[M1]		0.1018	
297.8 1	0.23 3	7964.00	43/2 <sup>-</sup>	7666.31	41/2 <sup>-</sup>	[M1]		0.0975	
299.1 1	0.67 4	6621.32	39/2 <sup>+</sup>	6322.17	35/2 <sup>+</sup>	[E2]		0.0608	
302.4 3	0.06 3	7994.30	43/2 <sup>-</sup>	7692.11	41/2 <sup>+</sup>	[E1]		0.01561	
303.1 2	0.28 4	6315.87	37/2 <sup>+</sup>	6012.80	35/2 <sup>+</sup>	[M1]		0.0930	
303.5 2	0.28 3	4533.45	29/2 <sup>-</sup>	4229.79	29/2 <sup>-</sup>	[M1]		0.0927	
306.9 1	0.20 6	5959.42	35/2 <sup>-</sup>	5652.56	33/2 <sup>-</sup>	[M1]		0.0900	
310.2 3	0.11 3	4843.79	31/2 <sup>-</sup>	4533.45	29/2 <sup>-</sup>	[M1]		0.0875	
312.0 4	0.04 2	7619.79	41/2 <sup>+</sup>	7307.72	39/2 <sup>-</sup>	[E1]		0.01444	
315.0 1	2.44 9	4006.71	27/2 <sup>-</sup>	3691.74	25/2 <sup>-</sup>	[M1]		0.0840	
<sup>x</sup> 316.0 @ 4									
316.0 2	0.49 9	5265.00	31/2 <sup>-</sup>	4948.63	31/2 <sup>+</sup>	[E1]		0.01399	
317.8 1	0.35 4	7212.67	41/2 <sup>-</sup>	6894.69	39/2 <sup>+</sup>	[E1]		0.01379	
317.9 1	0.94 4	5582.99	35/2 <sup>-</sup>	5265.00	31/2 <sup>-</sup>	[E2]		0.0505	
322.1 1	0.50 6	4533.45	29/2 <sup>-</sup>	4211.35	27/2 <sup>-</sup>	[M1]		0.0792	
323.8 1	0.14 3	3509.96	23/2 <sup>-</sup>	3186.20	23/2 <sup>+</sup>	[E1]		0.01317	
326.8 1	0.60 6	6894.69	39/2 <sup>+</sup>	6567.89	37/2 <sup>+</sup>	[M1]		0.0762	
327.9 1	0.63 8	7994.30	43/2 <sup>-</sup>	7666.31	41/2 <sup>-</sup>	[M1]		0.0755	
330.8 1	24.5 7	4948.63	31/2 <sup>+</sup>	4617.85	29/2 <sup>+</sup>	M1 <sup>&amp;ab</sup>		0.0738	$\alpha(\text{K})_{\text{exp}}=0.079$ 17 (1982Ba46) $\alpha(\text{exp})=0.07$ 2 (2020Br06) Mult.: A <sub>2</sub> =-0.22 2, A <sub>4</sub> =0.01 2 (1982Br13). Mult.: A <sub>2</sub> =-0.19 4 (1982Ba46).
339.2 1	78.3 24	8333.44	45/2 <sup>+</sup>	7994.30	43/2 <sup>-</sup>	E1 <sup>&amp;ab</sup>		0.01174	$\alpha(\text{exp})<0.03$ (2020Br06) Mult.: A <sub>2</sub> =-0.06 5, A <sub>4</sub> =-0.06 7 (1982Br13). Mult.: 1982Ba46 list average $\alpha(\text{K})_{\text{exp}}=0.029$ 3 obtained for the 339-340 keV doublet and the A <sub>2</sub> =-0.150 25 coefficient which indicate stretched dipoles.

9

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ <sup>†‡</sup>	$I_\gamma$ <sup>†h</sup>	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.#	$\delta$	$\alpha^i$	Comments
340.1 1	51.3 33	5923.00	37/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	M1 & <i>a</i>		0.0686	$\alpha(\text{exp})=0.07$ 1 (2020Br06) Mult.: $A_2=0.23$ 1, $A_4=-0.06$ 2 (1982Br13). Mult.: 1982Ba46 list average $\alpha(\text{K})_{\text{exp}}=0.029$ 3 obtained for the 339-340 keV doublet and the $A_2=-0.150$ 25 coefficient which indicate stretched dipoles.
344.0 3	0.22 3	7964.00	43/2 <sup>-</sup>	7619.79	41/2 <sup>+</sup>	[E1]		0.01135	
350.0 1	0.35 3	5622.23	33/2 <sup>+</sup>	5272.23	31/2 <sup>-</sup>	[E1]		0.01088	
352.9 1	2.63 13	5382.13	33/2 <sup>-</sup>	5029.10	33/2 <sup>+</sup>	[E1]		0.01066	
354.0 1	0.79 6	7389.40	43/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[M1]		0.0617	
354.0 3	0.04 2	8126.03	43/2 <sup>+</sup>	7771.94	43/2 <sup>+</sup>	[M1]		0.0617	
360.2 1	1.35 10	6012.80	35/2 <sup>+</sup>	5652.56	33/2 <sup>-</sup>	[E1]		0.01014	
360.8 1	68.5 28	3398.79	25/2 <sup>+</sup>	3038.01	23/2 <sup>+</sup>	M1+E2 <i>db</i>	0.18	0.0587	Mult.: $A_2=0.05$ 1, $A_4=-0.00$ 1 (1982Br13).
369.0 1	3.02 18	6936.83	39/2 <sup>+</sup>	6567.89	37/2 <sup>+</sup>	[M1]		0.0554	
369.4 1	5.98 25	8333.44	45/2 <sup>+</sup>	7964.00	43/2 <sup>-</sup>	E1 <i>a</i>		0.00954	$\alpha(\text{K})_{\text{exp}}<0.009$ (1982Ba46) $I_\gamma$ : from 1982Br13 ( $\gamma\gamma$ ).
<sup>x</sup> 374 1	$\approx 2.0$								
374.2 1	1.05 7	7212.67	41/2 <sup>-</sup>	6838.61	39/2 <sup>+</sup>	[E1]		0.00925	
374.5 1	0.30 6	7994.30	43/2 <sup>-</sup>	7619.79	41/2 <sup>+</sup>	[E1]		0.00923	
374.8 1	0.60 13	6838.61	39/2 <sup>+</sup>	6463.91	37/2 <sup>+</sup>	[M1]		0.0532	
375.0 2	0.09 2	6697.28	37/2 <sup>+</sup>	6322.17	35/2 <sup>+</sup>	[M1]		0.0531	
378.4 1	11.5 3	4070.09	27/2 <sup>-</sup>	3691.74	25/2 <sup>-</sup>	M1 <i>ab</i>		0.0518	$\alpha(\text{K})_{\text{exp}}=0.036$ 15 (1982Ba46) Mult.: $A_2=-0.21$ 2, $A_4=-0.02$ 3 (1982Br13). Mult.: $A_2=-0.15$ 4 (1982Ba46).
380.7 2	0.26 4	4450.72	29/2 <sup>-</sup>	4070.09	27/2 <sup>-</sup>	[M1]		0.0510	
381.5 1	0.55 6	8153.49	45/2 <sup>+</sup>	7771.94	43/2 <sup>+</sup>	[M1]		0.0508	
382.8 3	0.09 3	6463.91	37/2 <sup>+</sup>	6081.48	35/2 <sup>-</sup>	[E1]		0.00876	
384.5 3	0.06 2	7692.11	41/2 <sup>+</sup>	7307.72	39/2 <sup>-</sup>	[E1]		0.00867	
385.4 2	0.44 10	5767.45	35/2 <sup>-</sup>	5382.13	33/2 <sup>-</sup>	[M1]		0.0494	
390.5 1	0.78 3	6012.80	35/2 <sup>+</sup>	5622.23	33/2 <sup>+</sup>	[M1]		0.0478	
393.1 1	3.06 20	4843.79	31/2 <sup>-</sup>	4450.72	29/2 <sup>-</sup>	[M1]		0.0469	
395.5 1	1.26 9	3581.72	27/2 <sup>-</sup>	3186.20	23/2 <sup>+</sup>	[M2]		0.1662	
403.5 1	0.43 4	7126.75	39/2 <sup>-</sup>	6723.18	39/2 <sup>-</sup>	[M1]		0.0439	
406.5 1	0.60 6	4617.85	29/2 <sup>+</sup>	4211.35	27/2 <sup>-</sup>	[E1]		0.00759	
410.4 1	2.38 10	5382.13	33/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	[M1]		0.0420	Mult.: $A_2=0.30$ 7, $A_4=-0.06$ 9 (1982Br13), most likely Q transition, which contradicts the $\Delta J^\pi$ assignment of 2020Br06.
410.4 3	0.09 3	6181.27	35/2 <sup>+</sup>	5770.97	33/2 <sup>-</sup>	[E1]		0.00743	
413.7 2	0.28 7	6373.23	37/2 <sup>-</sup>	5959.42	35/2 <sup>-</sup>	[M1]		0.0411	
414.0 1	14.6 6	7035.34	41/2 <sup>+</sup>	6621.32	39/2 <sup>+</sup>	M1+E2 <i>a</i>		0.032	$\alpha(\text{K})_{\text{exp}}=0.033$ 7 (1982Ba46) Mult.: $A_2=0.06$ 2, $A_4=0.00$ 3 (1982Br13). Mult.: $A_2=-0.04$ 4 (1982Ba46).
415.2 1	0.91 6	4948.63	31/2 <sup>+</sup>	4533.45	29/2 <sup>-</sup>	[E1]		0.00722	
419.7 3	0.12 3	7771.94	43/2 <sup>+</sup>	7352.50	41/2 <sup>+</sup>	[M1]		0.0396	
421.2 1	7.40 22	5265.00	31/2 <sup>-</sup>	4843.79	31/2 <sup>-</sup>	M1(+E2) <i>ab</i>		0.031	$\alpha(\text{K})_{\text{exp}}=0.039$ 15(1982Ba46)

7

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.#	$\alpha^i$	Comments
								Mult.: A <sub>2</sub> =0.10 4, A <sub>4</sub> =-0.03 5 (1982Br13). Mult.: A <sub>2</sub> =0.15 7 (1982Ba46).
423.2 I	0.52 7	6894.69	39/2 <sup>+</sup>	6471.46	39/2 <sup>-</sup>	[E1]	0.00691	
424.9 I	10.4 3	4006.71	27/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	(M1) <sup>b</sup>	0.0384	Mult.: A <sub>2</sub> =0.33 4, A <sub>4</sub> =0.01 4 (1982Br13).
425.9 I	3.31 3	3186.20	23/2 <sup>+</sup>	2760.27	21/2 <sup>+</sup>	M1+E2 <sup>ab</sup>	0.030	$\alpha(\text{K})_{\text{exp}}=0.028$ 8 (1982Ba46) Mult.: A <sub>2</sub> =-0.07 6, A <sub>4</sub> =-0.08 18 (1982Br13). Mult.: A <sub>2</sub> =0.23 4 (1982Ba46).
428.7 3	0.15 3	6081.48	35/2 <sup>-</sup>	5652.56	33/2 <sup>-</sup>	[M1]	0.0375	
430.0 3	0.04 2	6012.80	35/2 <sup>+</sup>	5582.99	35/2 <sup>-</sup>	[E1]	0.00666	
430.8 I	0.24 4	6894.69	39/2 <sup>+</sup>	6463.91	37/2 <sup>+</sup>	[M1]	0.0370	
433.1 I	1.13 9	7964.00	43/2 <sup>-</sup>	7530.94	41/2 <sup>+</sup>	[E1]	0.00655	
433.6 I	0.83 9	5382.13	33/2 <sup>-</sup>	4948.63	31/2 <sup>+</sup>	[E1]	0.00653	
434.5 <sup>g</sup> I	5.78 42	8588.07	49/2 <sup>+</sup>	8153.49	45/2 <sup>+</sup>	E2 <sup>&amp;</sup>	0.0204	$\alpha(\text{exp})<0.03$ (2020Br06)
435.3 I	12.6 6	6906.82	41/2 <sup>+</sup>	6471.46	39/2 <sup>-</sup>	(E1) <sup>a</sup>	0.00647	$\alpha(\text{K})_{\text{exp}}=0.009$ 4 (1982Ba46) Mult.: A <sub>2</sub> =-0.04 4 (1982Ba46, for 435.3 $\gamma$ +434.5 $\gamma$ ). $\alpha(\text{K})_{\text{exp}}$ : for 435.3 $\gamma$ +434.5 $\gamma$ : 1982Ba46 state mult=E1 for one component and mult=E2 for the other. From the proposed level scheme, $\Delta\pi(434.5\gamma)=\text{no}$ , leaving mult(435.3 $\gamma$ )=E1.
440.1 I	0.24 3	6621.32	39/2 <sup>+</sup>	6181.27	35/2 <sup>+</sup>	[E2]	0.0197	
444.0 I	5.19 17	4450.72	29/2 <sup>-</sup>	4006.71	27/2 <sup>-</sup>	(M1+E2) <sup>a</sup>	0.0343	$\alpha(\text{K})_{\text{exp}}=0.017$ 7 (1982Ba46) Mult.: A <sub>2</sub> =0.11 8 (1982Ba46).
459.5 I	0.22 6	7396.18	41/2 <sup>+</sup>	6936.83	39/2 <sup>+</sup>	[M1]	0.0314	
463.3 I	1.58 9	7994.30	43/2 <sup>-</sup>	7530.94	41/2 <sup>+</sup>	[E1]	0.00560	
463.4 I	2.87 15	4533.45	29/2 <sup>-</sup>	4070.09	27/2 <sup>-</sup>	[M1]	0.0307	
<sup>x</sup> 463.8 3	3.6							I <sub><math>\gamma</math></sub> : from 1982Br13.
465.4 I	0.54 6	6936.83	39/2 <sup>+</sup>	6471.46	39/2 <sup>-</sup>	[E1]	0.00554	
470.0 I	0.42 3	5742.30	33/2 <sup>+</sup>	5272.23	31/2 <sup>-</sup>	[E1]	0.00542	
471.9 2	0.38 3	3509.96	23/2 <sup>-</sup>	3038.01	23/2 <sup>+</sup>	[E1]	0.00537	
472.7 3	0.03 2	6936.83	39/2 <sup>+</sup>	6463.91	37/2 <sup>+</sup>	[M1]	0.0292	
482.6 I	9.95 23	7389.40	43/2 <sup>+</sup>	6906.82	41/2 <sup>+</sup>	M1+E2 <sup>ab</sup>	0.022	$\alpha(\text{K})_{\text{exp}}=0.017$ (1982Ba46) Mult.: A <sub>2</sub> =0.28 10, A <sub>4</sub> =0.00 10 (1982Br13). Mult.: A <sub>2</sub> =0.12 4 (1982Ba46).
488.0 I	0.19 3	7874.04	41/2 <sup>-</sup>	7386.14	37/2 <sup>-</sup>	[E2]	0.01488	
488.4 I	0.51 4	4070.09	27/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[M1]	0.0268	
498.0 I	2.38 17	4948.63	31/2 <sup>+</sup>	4450.72	29/2 <sup>-</sup>	[E1]	0.00476	
501.5 I	0.49 6	7396.18	41/2 <sup>+</sup>	6894.69	39/2 <sup>+</sup>	[M1]	0.0251	
504.6 I	0.20 6	6463.91	37/2 <sup>+</sup>	5959.42	35/2 <sup>-</sup>	[E1]	0.00462	
505.5 I	2.12 12	3691.74	25/2 <sup>-</sup>	3186.20	23/2 <sup>+</sup>	D <sup>b</sup>		Mult.: A <sub>2</sub> =-0.26 10, A <sub>4</sub> =0.00 10 (1982Br13).
512.7 3	0.18 3	7530.94	41/2 <sup>+</sup>	7018.18	39/2 <sup>-</sup>	[E1]	0.00445	
514.0 I	0.62 7	7352.50	41/2 <sup>+</sup>	6838.61	39/2 <sup>+</sup>	[M1]	0.0236	
517.8 I	0.32 4	7825.71	41/2 <sup>-</sup>	7307.72	39/2 <sup>-</sup>	[M1]	0.0231	

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$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	Comments
518.1 2	0.29 4	6833.58	37/2 <sup>-</sup>	6315.87	37/2 <sup>+</sup>	[E1]	0.00435	
519.5 2	0.42 7	4211.35	27/2 <sup>-</sup>	3691.74	25/2 <sup>-</sup>	[M1]	0.0229	
520.4 1	0.36 4	5959.42	35/2 <sup>-</sup>	5439.13	31/2 <sup>-</sup>	[E2]	0.01257	
520.9 2	0.41 6	4971.71	31/2 <sup>-</sup>	4450.72	29/2 <sup>-</sup>	[M1]	0.0228	
526.1 3	0.25 7	7801.42	41/2 <sup>-</sup>	7275.45	41/2 <sup>-</sup>	[M1]	0.0222	
526.8 1	0.92 6	4533.45	29/2 <sup>-</sup>	4006.71	27/2 <sup>-</sup>	[M1]	0.0222	
538.4 1	4.20 17	5382.13	33/2 <sup>-</sup>	4843.79	31/2 <sup>-</sup>	[M1]	0.0210	
539.4 3	0.26 9	7666.31	41/2 <sup>-</sup>	7126.75	39/2 <sup>-</sup>	[M1]	0.0209	
540.9 1	2.79 10	5923.00	37/2 <sup>-</sup>	5382.13	33/2 <sup>-</sup>	[E2]	0.01137	
543.7 1	11.8 6	3581.72	27/2 <sup>-</sup>	3038.01	23/2 <sup>+</sup>	M2 <sup>e</sup>	0.0631	Mult.: A <sub>2</sub> =0.19 6, A <sub>4</sub> =-0.06 8 (1979K104). Mult.: A <sub>2</sub> =0.24 4, A <sub>4</sub> =-0.02 5 (1982Br13).
548.4 1	15.7 7	6471.46	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	M1 <sup>a</sup>	0.0200	$\alpha$ (K)exp=0.017 2 (1982Ba46) Mult.: A <sub>2</sub> =0.03 3, A <sub>4</sub> =-0.03 5 (1982Br13). Mult.: A <sub>2</sub> =0.01 3 (1982Ba46).
548.5 2	0.62 9	6315.87	37/2 <sup>+</sup>	5767.45	35/2 <sup>-</sup>	[E1]	0.00384	
550.3 1	0.24 6	7825.71	41/2 <sup>-</sup>	7275.45	41/2 <sup>-</sup>	[M1]	0.0198	
553.9 1	0.41 3	5582.99	35/2 <sup>-</sup>	5029.10	33/2 <sup>+</sup>	[E1]	0.00376	
554.8 3	0.08 3	6567.89	37/2 <sup>+</sup>	6012.80	35/2 <sup>+</sup>	[M1]	0.0194	
557.6 1	0.31 3	7396.18	41/2 <sup>+</sup>	6838.61	39/2 <sup>+</sup>	[M1]	0.0192	
559.1 3	0.17 3	6181.27	35/2 <sup>+</sup>	5622.23	33/2 <sup>+</sup>	[M1]	0.0191	
560.9 1	0.12 3	7596.10	39/2 <sup>-</sup>	7035.34	41/2 <sup>+</sup>	[E1]	0.00365	
561.6 1	0.24 3	8333.44	45/2 <sup>+</sup>	7771.94	43/2 <sup>+</sup>	[M1]	0.0188	
566.3 1	0.41 3	7874.04	41/2 <sup>-</sup>	7307.72	39/2 <sup>-</sup>	[M1]	0.0185	
567.9 1	0.56 4	7964.00	43/2 <sup>-</sup>	7396.18	41/2 <sup>+</sup>	[E1]	0.00356	
571.5 1	1.06 10	7035.34	41/2 <sup>+</sup>	6463.91	37/2 <sup>+</sup>	[E2]	0.00989	
574.5 1	1.07 6	7964.00	43/2 <sup>-</sup>	7389.40	43/2 <sup>+</sup>	[E1]	0.00347	
576.9 3	0.18 4	6658.22	39/2 <sup>-</sup>	6081.48	35/2 <sup>-</sup>	[E2]	0.00966	
578.7 1	0.20 3	6894.69	39/2 <sup>+</sup>	6315.87	37/2 <sup>+</sup>	[M1]	0.01748	
584.5 2	0.21 4	7619.79	41/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[M1]	0.01705	
591.1 1	3.30 13	6906.82	41/2 <sup>+</sup>	6315.87	37/2 <sup>+</sup>	(E2) <sup>a</sup>	0.00909	$\alpha$ (K)exp=0.002 3 (1982Ba46)
593.0 3	0.10 3	5622.23	33/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[M1]	0.01644	
593.78 1	2.74 11	8588.07	49/2 <sup>+</sup>	7994.30	43/2 <sup>-</sup>	E3 <sup>a</sup>	0.0237	$\alpha$ (K)exp=0.0016 3 (1982Ba46)
598.2 1	1.91 10	7994.30	43/2 <sup>-</sup>	7396.18	41/2 <sup>+</sup>	[E1]	0.00318	
<sup>x</sup> 598.3 @ 2	3 1							
598.7 1	0.26 6	7874.04	41/2 <sup>-</sup>	7275.45	41/2 <sup>-</sup>	[M1]	0.01605	
605.0 1	2.88 15	7994.30	43/2 <sup>-</sup>	7389.40	43/2 <sup>+</sup>	(E1) <sup>a</sup>	0.00310	$\alpha$ (K)exp=0.006 2 (1982Ba46)
605.8 3	0.40 8	6373.23	37/2 <sup>-</sup>	5767.45	35/2 <sup>-</sup>	[M1]	0.01559	
608.5 1	13.8 8	6621.32	39/2 <sup>+</sup>	6012.80	35/2 <sup>+</sup>	E2 <sup>ab</sup>	0.0084 7	$\alpha$ (K)exp=0.007 1 (1982Ba46) E <sub><math>\gamma</math></sub> : $\gamma$ ray replaced at this level by 2020Br06 from 5557 level (previously placed by 1982Ba46 and 1982Br13). Mult.: A <sub>2</sub> =0.27 2, A <sub>4</sub> =-0.03 3 (1982Br13). Mult.: A <sub>2</sub> =0.11 5 (1982Ba46).
611.2 1	1.83 8	4617.85	29/2 <sup>+</sup>	4006.71	27/2 <sup>-</sup>	[E1]	0.00304	

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.#	$\alpha^i$	Comments
611.4 1	5.64 28	5582.99	35/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	E2 <sup>a</sup>	0.00837	$\alpha$ (K)exp=0.0070 15 (1982Ba46) Mult.: A <sub>2</sub> =0.04 5, A <sub>4</sub> =0.01 7 (1982Br13). Mult.: A <sub>2</sub> =0.06 7 (1982Ba46).
614.0 1	4.97 20	4843.79	31/2 <sup>-</sup>	4229.79	29/2 <sup>-</sup>	M1+E2 <sup>ab</sup>	0.01507	$\alpha$ (K)exp=0.0050 15 (1982Ba46) Mult.: A <sub>2</sub> =0.01 6, A <sub>4</sub> =0.08 9 (1982Br13). Mult.: A <sub>2</sub> =0.16 10 (1982Ba46). $\alpha$ (K)exp: deduced from intensity balance.
618.7 1	0.22 3	7801.42	41/2 <sup>-</sup>	7182.84	39/2 <sup>+</sup>	[E1]	0.00296	Mult.: M1 in Table III of 2020Br06 is a misprint, as confirmed in e-mail reply from R. Broda.
620.9 1	0.15 2	6936.83	39/2 <sup>+</sup>	6315.87	37/2 <sup>+</sup>	[M1]	0.01466	
623.4 3	0.08 3	5652.56	33/2 <sup>-</sup>	5029.10	33/2 <sup>+</sup>	[E1]	0.00291	
623.8 <sup>8</sup> 3	0.13 3	8588.07	49/2 <sup>+</sup>	7964.00	43/2 <sup>-</sup>	[E3]	0.0205	
630.7 2	0.18 4	6012.80	35/2 <sup>+</sup>	5382.13	33/2 <sup>-</sup>	[E1]	0.00284	
636.3 1	0.81 9	7530.94	41/2 <sup>+</sup>	6894.69	39/2 <sup>+</sup>	[M1]	0.01379	
638.6 1	5.44 21	3398.79	25/2 <sup>+</sup>	2760.27	21/2 <sup>+</sup>	E2 <sup>b</sup>	0.00753	Mult.: A <sub>2</sub> =0.24 6, A <sub>4</sub> =-0.03 8 (1982Br13).
641.8 1	0.26 4	7994.30	43/2 <sup>-</sup>	7352.50	41/2 <sup>+</sup>	[E1]	0.00274	
642.5 1	0.13 3	6081.48	35/2 <sup>-</sup>	5439.13	31/2 <sup>-</sup>	[E2]	0.00742	
645.0 1	0.46 6	6567.89	37/2 <sup>+</sup>	5923.00	37/2 <sup>-</sup>	[E1]	0.00271	
646.2 2	0.30 3	4337.95	27/2 <sup>-</sup>	3691.74	25/2 <sup>-</sup>	[M1]	0.01327	
647.2 2	0.61 8	5265.00	31/2 <sup>-</sup>	4617.85	29/2 <sup>+</sup>	[E1]	0.00269	
647.9 2	0.46 6	4229.79	29/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[M1]	0.01318	
650.4 4	0.04 2	5622.23	33/2 <sup>+</sup>	4971.71	31/2 <sup>-</sup>	[E1]	0.00266	
653.8 1	4.97 22	3691.74	25/2 <sup>-</sup>	3038.01	23/2 <sup>+</sup>	D <sup>b</sup>		Mult.: A <sub>2</sub> =-0.17 5, A <sub>4</sub> =-0.02 6 (1982Br13).
654.4 1	0.60 4	5272.23	31/2 <sup>-</sup>	4617.85	29/2 <sup>+</sup>	[E1]	0.00263	
656.3 1	0.24 3	7964.00	43/2 <sup>-</sup>	7307.72	39/2 <sup>-</sup>	[E2]	0.00705	
660.4 1	0.18 4	7124.46	39/2 <sup>-</sup>	6463.91	37/2 <sup>+</sup>	[E1]	0.00258	
671.4 1	2.44 10	4070.09	27/2 <sup>-</sup>	3398.79	25/2 <sup>+</sup>	D		Mult.: A <sub>2</sub> =-0.26 19, A <sub>4</sub> =0.01 25 (1982Br13).
673.6 1	0.31 4	5622.23	33/2 <sup>+</sup>	4948.63	31/2 <sup>+</sup>	[M1]	0.01197	
674.8 4	0.08 4	7801.42	41/2 <sup>-</sup>	7126.75	39/2 <sup>-</sup>	[M1]	0.01192	
675.0 3	0.07 3	7396.18	41/2 <sup>+</sup>	6721.23	37/2 <sup>-</sup>	[M2]	0.0337	
680.8 1	0.33 4	5652.56	33/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	[M1]	0.01166	
686.7 1	0.55 4	7994.30	43/2 <sup>-</sup>	7307.72	39/2 <sup>-</sup>	[E2]	0.00633	
691.1 1	0.42 3	7874.04	41/2 <sup>-</sup>	7182.84	39/2 <sup>+</sup>	[E1]	0.00235	Mult.: M1 in Table III of 2020Br06 is a misprint, as confirmed in e-mail reply from R. Broda.
692.3 1	0.84 9	7530.94	41/2 <sup>+</sup>	6838.61	39/2 <sup>+</sup>	[M1]	0.01118	
<sup>x</sup> 693.0 4								
696.5 1	0.50 3	6463.91	37/2 <sup>+</sup>	5767.45	35/2 <sup>-</sup>	[E1]	0.00231	
698.3 1	18.7 8	6621.32	39/2 <sup>+</sup>	5923.00	37/2 <sup>-</sup>	E1 <sup>ab</sup>	0.00230	$\alpha$ (K)exp=0.0015 5 (1982Ba46) Mult.: A <sub>2</sub> =-0.32 5, A <sub>4</sub> =0.15 8 (1982Br13). Mult.: A <sub>2</sub> =-0.16 4 (1982Ba46).
698.8 1	0.29 4	7396.18	41/2 <sup>+</sup>	6697.28	37/2 <sup>+</sup>	[E2]	0.00608	
698.9 1	0.33 1	6658.22	39/2 <sup>-</sup>	5959.42	35/2 <sup>-</sup>	[E2]	0.00607	

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	Comments
699.0 4	0.11 6	6081.48	35/2 <sup>-</sup>	5382.13	33/2 <sup>-</sup>	[M1]	0.01092	
699.0 3	0.12 4	7825.71	41/2 <sup>-</sup>	7126.75	39/2 <sup>-</sup>	[M1]	0.01092	
700.0 2	0.17 3	6322.17	35/2 <sup>+</sup>	5622.23	33/2 <sup>+</sup>	[M1]	0.01088	Mult.: E1 in Table III of 2020Br06 is a misprint, as confirmed in e-mail reply from R. Broda.
701.1 1	0.08 2	7825.71	41/2 <sup>-</sup>	7124.46	39/2 <sup>-</sup>	[M1]	0.01084	
702.0 7	0.08 3	7596.10	39/2 <sup>-</sup>	6894.69	39/2 <sup>+</sup>	[E1]	0.00227	
703.9 1	0.34 6	6471.46	39/2 <sup>-</sup>	5767.45	35/2 <sup>-</sup>	[E2]	0.00597	
704.0 3	0.20 3	5652.56	33/2 <sup>-</sup>	4948.63	31/2 <sup>+</sup>	[E1]	0.00226	
713.4 1	0.17 3	5742.30	33/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[M1]	0.01039	
719.4 1	0.40 4	7035.34	41/2 <sup>+</sup>	6315.87	37/2 <sup>+</sup>	[E2]	0.00568	
721.3 5	0.04 2	7903.57	41/2 <sup>-</sup>	7182.84	39/2 <sup>+</sup>	[E1]	0.00215	
733.2 3	0.28 4	6315.87	37/2 <sup>+</sup>	5582.99	35/2 <sup>-</sup>	[E1]	0.00208	
736.6 1	0.81 7	7771.94	43/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[M1]	0.00960	
738.0 1	0.14 3	7396.18	41/2 <sup>+</sup>	6658.22	39/2 <sup>-</sup>	[E1]	0.00205	
738.2 3	1.10 8	5767.45	35/2 <sup>-</sup>	5029.10	33/2 <sup>+</sup>	[E1]	0.00205	
739.8 4	0.09 3	7307.72	39/2 <sup>-</sup>	6567.89	37/2 <sup>+</sup>	[E1]	0.00204	
741.3 1	1.45 8	7212.67	41/2 <sup>-</sup>	6471.46	39/2 <sup>-</sup>	[M1]	0.00945	
742.0 2	0.65 3	4971.71	31/2 <sup>-</sup>	4229.79	29/2 <sup>-</sup>	[M1]	0.00943	
747.2 1	1.73 6	7874.04	41/2 <sup>-</sup>	7126.75	39/2 <sup>-</sup>	[M1]	0.00927	
<sup>x</sup> 748.0 @ 4								
749.7 3	0.55 8	3509.96	23/2 <sup>-</sup>	2760.27	21/2 <sup>+</sup>	[E1]	0.00199	
749.7 5	0.07 2	7874.04	41/2 <sup>-</sup>	7124.46	39/2 <sup>-</sup>	[M1]	0.00919	
751.3 1	0.55 9	7964.00	43/2 <sup>-</sup>	7212.67	41/2 <sup>-</sup>	[M1]	0.00914	
756.2 2	0.17 3	4337.95	27/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[M1]	0.00900	
759.1 2	0.49 4	4450.72	29/2 <sup>-</sup>	3691.74	25/2 <sup>-</sup>	[E2]	0.00502	
762.7 1	0.17 4	7596.10	39/2 <sup>-</sup>	6833.58	37/2 <sup>-</sup>	[M1]	0.00881	
764.1 1	5.61 17	8153.49	45/2 <sup>+</sup>	7389.40	43/2 <sup>+</sup>	M1 <sup>a</sup>	0.00877	$\alpha(\text{K})\text{exp}=0.0067$ 16 (1982Ba46)
765.9 1	0.28 3	7801.42	41/2 <sup>-</sup>	7035.34	41/2 <sup>+</sup>	[E1]	0.00190	
768.3 3	0.09 3	7389.40	43/2 <sup>+</sup>	6621.32	39/2 <sup>+</sup>	[E2]	0.00488	
770.7 3	0.11 6	5742.30	33/2 <sup>+</sup>	4971.71	31/2 <sup>-</sup>	[E1]	0.00188	
773.6 1	0.42 7	8126.03	43/2 <sup>+</sup>	7352.50	41/2 <sup>+</sup>	[M1]	0.00851	
778.4 2	0.24 3	5622.23	33/2 <sup>+</sup>	4843.79	31/2 <sup>-</sup>	[E1]	0.00184	
<sup>x</sup> 781.0 @ 4								
781.3 2	0.33 6	7619.79	41/2 <sup>+</sup>	6838.61	39/2 <sup>+</sup>	[M1]	0.00831	
781.7 1	1.58 8	7994.30	43/2 <sup>-</sup>	7212.67	41/2 <sup>-</sup>	[M1]	0.00830	
790.3 2	0.88 9	6373.23	37/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[M1]	0.00808	
790.3 1	2.19 7	7825.71	41/2 <sup>-</sup>	7035.34	41/2 <sup>+</sup>	[E1]	0.00179	
793.8 3	0.11 6	5742.30	33/2 <sup>+</sup>	4948.63	31/2 <sup>+</sup>	[M1]	0.00799	
795.7 1	1.05 8	5767.45	35/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	[E2]	0.00451	
797.5 2	0.11 3	7692.11	41/2 <sup>+</sup>	6894.69	39/2 <sup>+</sup>	[M1]	0.00790	
798.0 3	0.17 6	6721.23	37/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	0.00789	
799.3 2	0.23 3	5770.97	33/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	[M1]	0.00786	Mult.: E1 in Table III of 2020Br06 is a misprint, as confirmed in e-mail reply from R. Broda.

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ <sup>†‡</sup>	$I_\gamma$ <sup>†h</sup>	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	Comments
800.1 1	0.11 3	6723.18	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	0.00784	
800.5 1	0.23 6	6567.89	37/2 <sup>+</sup>	5767.45	35/2 <sup>-</sup>	[E1]	1.74×10 <sup>-3</sup>	
808.8 2	0.14 3	5652.56	33/2 <sup>-</sup>	4843.79	31/2 <sup>-</sup>	[M1]	0.00763	
809.6 2	0.22 3	7182.84	39/2 <sup>+</sup>	6373.23	37/2 <sup>-</sup>	[E1]	1.70×10 <sup>-3</sup>	
812.6 2	1.40 8	4211.35	27/2 <sup>-</sup>	3398.79	25/2 <sup>+</sup>	[E1]	1.69×10 <sup>-3</sup>	
814.2 1	7.90 17	5265.00	31/2 <sup>-</sup>	4450.72	29/2 <sup>-</sup>	M1 <sup>ab</sup>	0.00751	$\alpha(\text{K})_{\text{exp}}=0.0063$ 12 (1982Ba46) Mult.: A <sub>2</sub> =-0.17 7, A <sub>4</sub> =0.00 8 (1982Br13). Mult.: A <sub>2</sub> =-0.23 8 (1982Ba46).
820.8 1	0.83 6	6833.58	37/2 <sup>-</sup>	6012.80	35/2 <sup>+</sup>	[E1]	1.66×10 <sup>-3</sup>	
821.3 1	4.10 2	3581.72	27/2 <sup>-</sup>	2760.27	21/2 <sup>+</sup>	[E3]	0.00966	Mult.: A <sub>2</sub> =0.26 1, A <sub>4</sub> =-0.04 17 (1982Br13).
821.4 1	0.49 9	5272.23	31/2 <sup>-</sup>	4450.72	29/2 <sup>-</sup>	[M1]	0.00735	
836.7 3	0.56 6	4843.79	31/2 <sup>-</sup>	4006.71	27/2 <sup>-</sup>	[E2]	0.00404	
837.0 4	0.06 3	7964.00	43/2 <sup>-</sup>	7126.75	39/2 <sup>-</sup>	[E2]	0.00403	
838.7 1	4.84 14	7874.04	41/2 <sup>-</sup>	7035.34	41/2 <sup>+</sup>	E1 <sup>a</sup>	1.59×10 <sup>-3</sup>	$\alpha(\text{K})_{\text{exp}}<0.002$ (1982Ba46)
843.5 4	0.13 3	7307.72	39/2 <sup>-</sup>	6463.91	37/2 <sup>+</sup>	[E1]	1.57×10 <sup>-3</sup>	
848.7 1	4.39 17	5382.13	33/2 <sup>-</sup>	4533.45	29/2 <sup>-</sup>	E2 <sup>a</sup>	0.00391	$\alpha(\text{K})_{\text{exp}}<0.0038$ (1982Ba46)
853.9 3	0.10 4	6621.32	39/2 <sup>+</sup>	5767.45	35/2 <sup>-</sup>	[M2]	0.01748	
855.8 2	0.20 3	7874.04	41/2 <sup>-</sup>	7018.18	39/2 <sup>-</sup>	[M1]	0.00665	
860.7 4	0.08 4	7182.84	39/2 <sup>+</sup>	6322.17	35/2 <sup>+</sup>	[E2]	0.00379	
864.6 1	1.90 8	7801.42	41/2 <sup>-</sup>	6936.83	39/2 <sup>+</sup>	[E1]	1.50×10 <sup>-3</sup>	
865.2 3	0.12 3	7771.94	43/2 <sup>+</sup>	6906.82	41/2 <sup>+</sup>	[M1]	0.00648	
<sup>x</sup> 866.0 5	2.1							
867.0 1	0.72 6	7182.84	39/2 <sup>+</sup>	6315.87	37/2 <sup>+</sup>	[M1]	0.00645	
867.4 3	0.20 6	7994.30	43/2 <sup>-</sup>	7126.75	39/2 <sup>-</sup>	[E2]	0.00373	
868.9 1	8.64 28	4450.72	29/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	M1+E2 <sup>ab</sup>	0.0051	$\alpha(\text{K})_{\text{exp}}=0.0048$ 9 (1982Ba46) Mult.: A <sub>2</sub> =0.32 5, A <sub>4</sub> =-0.04 6 (1982Br13). Mult.: A <sub>2</sub> =0.28 10 (1982Ba46).
880.8 1	0.42 7	6463.91	37/2 <sup>+</sup>	5582.99	35/2 <sup>-</sup>	[E1]	1.45×10 <sup>-3</sup>	
884.7 3	0.09 3	8097.17	43/2 <sup>+</sup>	7212.67	41/2 <sup>-</sup>	[E1]	1.43×10 <sup>-3</sup>	
888.5 1	0.56 3	6471.46	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	0.00354	
888.7 3	0.28 7	7825.71	41/2 <sup>-</sup>	6936.83	39/2 <sup>+</sup>	[E1]	1.42×10 <sup>-3</sup>	
894.6 1	1.40 13	7801.42	41/2 <sup>-</sup>	6906.82	41/2 <sup>+</sup>	[E1]	1.40×10 <sup>-3</sup>	
898.3 1	0.33 6	5742.30	33/2 <sup>+</sup>	4843.79	31/2 <sup>-</sup>	[E1]	1.39×10 <sup>-3</sup>	
906.0 3	0.09 6	5439.13	31/2 <sup>-</sup>	4533.45	29/2 <sup>-</sup>	[M1]	0.00580	
906.7 1	2.15 10	7801.42	41/2 <sup>-</sup>	6894.69	39/2 <sup>+</sup>	[E1]	1.37×10 <sup>-3</sup>	
909.6 1	0.86 4	7530.94	41/2 <sup>+</sup>	6621.32	39/2 <sup>+</sup>	[M1]	0.00574	
913.3 1	0.22 2	8126.03	43/2 <sup>+</sup>	7212.67	41/2 <sup>-</sup>	[E1]	1.35×10 <sup>-3</sup>	
915.5 1	4.06 13	6838.61	39/2 <sup>+</sup>	5923.00	37/2 <sup>-</sup>	E1 <sup>ab</sup>	1.34×10 <sup>-3</sup>	$\alpha(\text{K})_{\text{exp}}<0.001$ (1982Br13) Mult.: A <sub>2</sub> =-0.20 11, A <sub>4</sub> =-0.04 14 (1982Br13).
919.0 3	0.19 4	7825.71	41/2 <sup>-</sup>	6906.82	41/2 <sup>+</sup>	[E1]	1.33×10 <sup>-3</sup>	
923.8 3	0.17 10	5767.45	35/2 <sup>-</sup>	4843.79	31/2 <sup>-</sup>	[E2]	0.00326	
924.1 1	0.71 6	6936.83	39/2 <sup>+</sup>	6012.80	35/2 <sup>+</sup>	[E2]	0.00325	
924.7 1	0.92 6	7396.18	41/2 <sup>+</sup>	6471.46	39/2 <sup>-</sup>	[E1]	1.32×10 <sup>-3</sup>	

							$\gamma(^{147}\text{Gd})$ (continued)			
$E_\gamma$ †‡	$I_\gamma$ †h	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	$I(\gamma+ce)$ h	Comments	
927.2 2	0.86 6	5265.00	31/2 <sup>-</sup>	4337.95	27/2 <sup>-</sup>	[E2]	0.00323			
928.6 1	2.30 17	7964.00	43/2 <sup>-</sup>	7035.34	41/2 <sup>+</sup>	[E1]	1.31×10 <sup>-3</sup>			
929.8 1	0.62 6	6697.28	37/2 <sup>+</sup>	5767.45	35/2 <sup>-</sup>	[E1]	1.30×10 <sup>-3</sup>			
<sup>x</sup> 935.5 3	3.6									
937.2 1	4.00 19	7874.04	41/2 <sup>-</sup>	6936.83	39/2 <sup>+</sup>	E1 <sup>a</sup>	1.28×10 <sup>-3</sup>		$\alpha(\text{K})\text{exp}<0.0012$ (1982Ba46)	
937.9 2	1.82 10	3509.96	23/2 <sup>-</sup>	2572.15	19/2 <sup>-</sup>	[E2]	0.00315			
939.3 3	0.39 6	4337.95	27/2 <sup>-</sup>	3398.79	25/2 <sup>+</sup>	[E1]	1.28×10 <sup>-3</sup>			
944.0 1	1.13 4	8333.44	45/2 <sup>+</sup>	7389.40	43/2 <sup>+</sup>	[M1]	0.00525			
951.7 1	1.12 7	4533.45	29/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[M1]	0.00515			
958.9 1	4.00 20	7994.30	43/2 <sup>-</sup>	7035.34	41/2 <sup>+</sup>	E1 <sup>a</sup>	1.23×10 <sup>-3</sup>		$\alpha(\text{K})\text{exp}<0.0019$ (1982Ba46)	
962.9 1	0.31 6	7801.42	41/2 <sup>-</sup>	6838.61	39/2 <sup>+</sup>	[E1]	1.22×10 <sup>-3</sup>			
964.9 2	0.40 7	4971.71	31/2 <sup>-</sup>	4006.71	27/2 <sup>-</sup>	[E2]	0.00297			
<sup>x</sup> 967.0 @ 4	4 1					(E1)	1.21×10 <sup>-3</sup>		$\alpha(\text{K})\text{exp}<0.0018$ (1982Ba46) $\alpha(\text{K})=0.001037$ 15; $\alpha(\text{L})=0.0001356$ 19; $\alpha(\text{M})=2.91\times 10^{-5}$ 4; $\alpha(\text{N}+..)=7.79\times 10^{-6}$ 11 $\alpha(\text{N})=6.69\times 10^{-6}$ 10; $\alpha(\text{O})=1.036\times 10^{-6}$ 15; $\alpha(\text{P})=6.97\times 10^{-8}$ 10	
967.1 1	2.64 17	7874.04	41/2 <sup>-</sup>	6906.82	41/2 <sup>+</sup>	E1 <sup>a</sup>	1.21×10 <sup>-3</sup>		$\alpha(\text{K})\text{exp}<0.0018$ (1982Ba46)	
967.6 3	0.55 11	7801.42	41/2 <sup>-</sup>	6833.58	37/2 <sup>-</sup>	[E2]	0.00295			
<sup>x</sup> 971.4 2	4.8					E1	1.20×10 <sup>-3</sup>		$\alpha(\text{K})\text{exp}<0.0010$ (1982Ba46) $\alpha(\text{K})=0.001028$ 15; $\alpha(\text{L})=0.0001344$ 19; $\alpha(\text{M})=2.89\times 10^{-5}$ 4; $\alpha(\text{N}+..)=7.72\times 10^{-6}$ 11 $\alpha(\text{N})=6.63\times 10^{-6}$ 10; $\alpha(\text{O})=1.027\times 10^{-6}$ 15; $\alpha(\text{P})=6.91\times 10^{-8}$ 10 Mult.: $A_2=-0.29$ 15, $A_4=-0.05$ 20 (1982Br13).	
971.6 1	4.64 17	6894.69	39/2 <sup>+</sup>	5923.00	37/2 <sup>-</sup>	[E1]	1.20×10 <sup>-3</sup>			
979.2 1	1.97 13	7874.04	41/2 <sup>-</sup>	6894.69	39/2 <sup>+</sup>	[E1]	1.18×10 <sup>-3</sup>			
983.8 1	5.16 18	6012.80	35/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[M1]	0.00475			
<sup>x</sup> 984.6 @						E2			$\alpha(\text{K})\text{exp}=0.0030$ 12 (1982Ba46) $I_\gamma$ : 68 8 relative to 254 $\gamma$ in 1982Ba46 only. Mult.: $A_2=0.15$ 8 (1982Ba46). $E_\gamma$ : $\gamma$ ray replaced at this level by 2020Br06 from 5557 level (uncertainly placed by 1982Br13). Mult.: $A_2=0.36$ 13, $A_4=0.28$ 18 (1982Br13) for this and 984 1 at 6906 level.	
984.8 1	2.54 17	6567.89	37/2 <sup>+</sup>	5582.99	35/2 <sup>-</sup>					
987.3 3	0.10 3	7825.71	41/2 <sup>-</sup>	6838.61	39/2 <sup>+</sup>	[E1]	1.16×10 <sup>-3</sup>			
991.8 1	1.48 9	7307.72	39/2 <sup>-</sup>	6315.87	37/2 <sup>+</sup>	[E1]	1.15×10 <sup>-3</sup>			
997.1 <sup>g</sup> 1	99.408 9	997.10	13/2 <sup>+</sup>	0.0	7/2 <sup>-</sup>	[E3]	0.00596	100.0	$I_\gamma$ : deduced by evaluator from $I(\gamma+ce)=100.0$ and $\alpha(\text{total})$ . Mult.: $A_2=0.33$ 1, $A_4=0.00$ 2 (1982Br13).	
998.5 2	0.14 4	7619.79	41/2 <sup>+</sup>	6621.32	39/2 <sup>+</sup>	[M1]	0.00459			
1007.8 3	0.09 3	7666.31	41/2 <sup>-</sup>	6658.22	39/2 <sup>-</sup>	[M1]	0.00449			
1011.4 3	0.09 3	7669.68	39/2 <sup>-</sup>	6658.22	39/2 <sup>-</sup>	[M1]	0.00445			

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †‡	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	Comments
1013.8 3	0.20 4	6936.83	39/2 <sup>+</sup>	5923.00	37/2 <sup>-</sup>	[E1]	1.11×10 <sup>-3</sup>	
1035.4 1	0.72 7	7874.04	41/2 <sup>-</sup>	6838.61	39/2 <sup>+</sup>	[E1]	1.06×10 <sup>-3</sup>	
1036.1 1	24.5 7	4617.85	29/2 <sup>+</sup>	3581.72	27/2 <sup>-</sup>	E1 <sup>ab</sup>	1.06×10 <sup>-3</sup>	$\alpha(\text{K})_{\text{exp}}=0.0007$ 3 (1982Ba46) Mult.: A <sub>2</sub> =-0.34 3, A <sub>4</sub> =-0.01 4 (1982Br13). Mult.: A <sub>2</sub> =-0.16 3 (1982Ba46).
1038.3 1	0.33 17	6621.32	39/2 <sup>+</sup>	5582.99	35/2 <sup>-</sup>	[M2]	0.01035	
1040.4 1	0.55 9	7874.04	41/2 <sup>-</sup>	6833.58	37/2 <sup>-</sup>	[E2]	0.00253	
1047.5 2	0.22 6	7705.92	39/2 <sup>-</sup>	6658.22	39/2 <sup>-</sup>	[M1]	0.00409	
1053.6 2	0.73 8	5265.00	31/2 <sup>-</sup>	4211.35	27/2 <sup>-</sup>	[E2]	0.00247	
1057.1 1	8.74 23	7964.00	43/2 <sup>-</sup>	6906.82	41/2 <sup>+</sup>	E1 <sup>a</sup>	1.02×10 <sup>-3</sup>	$\alpha(\text{K})_{\text{exp}}=0.0008$ 9 (1982Ba46) Mult.: A <sub>2</sub> =-0.20 9 (1982Ba46).
1061.9 1	0.65 3	8097.17	43/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[M1]	0.00396	
1064.3 1	5.65 23	6012.80	35/2 <sup>+</sup>	4948.63	31/2 <sup>+</sup>	E2 <sup>a</sup>	0.00242	$\alpha(\text{K})_{\text{exp}}=0.0017$ 7 (1982Ba46) E <sub>γ</sub> : $\gamma$ ray replaced at this level by 2020Br06 from 6621 level (previously placed by 1982Ba46 and 1982Br13). Mult.: A <sub>2</sub> =0.17 10 (1982Ba46).
1065.0 3	0.11 3	7903.57	41/2 <sup>-</sup>	6838.61	39/2 <sup>+</sup>	[E1]	1.01×10 <sup>-3</sup>	
1070.6 2	0.20 3	7692.11	41/2 <sup>+</sup>	6621.32	39/2 <sup>+</sup>	[M1]	0.00389	
1079.1 2	0.14 6	7800.35	39/2 <sup>-</sup>	6721.23	37/2 <sup>-</sup>	[M1]	0.00381	
1080.5 3	0.10 3	7396.18	41/2 <sup>+</sup>	6315.87	37/2 <sup>+</sup>	[E2]	0.00234	
1087.4 1	3.62 11	7994.30	43/2 <sup>-</sup>	6906.82	41/2 <sup>+</sup>	E1	9.73×10 <sup>-4</sup>	
1090.7 1	1.59 4	8126.03	43/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[M1]	0.00372	
<sup>x</sup> 1091.0 @ 4								
1095.1 2	0.32 3	7018.18	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	0.00368	
1102.4 5	0.07 3	7825.71	41/2 <sup>-</sup>	6723.18	39/2 <sup>-</sup>	[M1]	0.00362	
1104.3 4	0.55 11	7801.42	41/2 <sup>-</sup>	6697.28	37/2 <sup>+</sup>	[M2]	0.00880	
1109.7 2	0.13 2	6081.48	35/2 <sup>-</sup>	4971.71	31/2 <sup>-</sup>	[E2]	0.00222	
1114.3 1	0.84 4	6697.28	37/2 <sup>+</sup>	5582.99	35/2 <sup>-</sup>	[E1]	9.33×10 <sup>-4</sup>	
1118.1 1	0.47 4	8153.49	45/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[E2]	0.00219	
1124.4 1	1.14 8	5742.30	33/2 <sup>+</sup>	4617.85	29/2 <sup>+</sup>	[E2]	0.00216	
1132.1 1	0.24 6	7596.10	39/2 <sup>-</sup>	6463.91	37/2 <sup>+</sup>	[E1]	9.09×10 <sup>-4</sup>	
1138.2 1	0.41 3	6721.23	37/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[M1]	0.00336	
1140.2 1	0.40 3	6723.18	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	0.00210	
1152.1 1	0.30 6	6181.27	35/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[M1]	0.00327	
1152.2 1	9.85 31	5382.13	33/2 <sup>-</sup>	4229.79	29/2 <sup>-</sup>	E2 <sup>ab</sup>	0.00206	$\alpha(\text{K})_{\text{exp}}=0.0016$ 6 (1982Ba46) Mult.: A <sub>2</sub> =0.26 8, A <sub>4</sub> =-0.07 9 (1982Br13). Mult.: A <sub>2</sub> =0.19 6 (1982Ba46).
1155.8 1	0.30 6	7619.79	41/2 <sup>+</sup>	6463.91	37/2 <sup>+</sup>	[E2]	0.00205	
1167.9 1	0.29 3	7825.71	41/2 <sup>-</sup>	6658.22	39/2 <sup>-</sup>	[M1]	0.00316	E <sub>γ</sub> : somewhat poor fit, level-energy difference=1167.5.
1180.2 1	4.20 17	7801.42	41/2 <sup>-</sup>	6621.32	39/2 <sup>+</sup>	[E1]	8.56×10 <sup>-4</sup>	
<sup>x</sup> 1180.3 5	4.5							
1190.2 1	0.21 2	8097.17	43/2 <sup>+</sup>	6906.82	41/2 <sup>+</sup>	[M1]	0.00303	
1194.9 1	1.42 8	7666.31	41/2 <sup>-</sup>	6471.46	39/2 <sup>-</sup>	[M1]	0.00300	

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ ††	$I_\gamma$ †h	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	Comments
1195.0 1	1.08 10	5265.00	31/2 <sup>-</sup>	4070.09	27/2 <sup>-</sup>	[E2]	0.00192	
1198.0 3	0.13 3	7669.68	39/2 <sup>-</sup>	6471.46	39/2 <sup>-</sup>	[M1]	0.00298	
1203.7 1	1.67 10	7126.75	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	0.00295	
1204.5 1	0.75 9	7825.71	41/2 <sup>-</sup>	6621.32	39/2 <sup>+</sup>	[E1]	8.35×10 <sup>-4</sup>	
1215.7 3	0.11 4	7874.04	41/2 <sup>-</sup>	6658.22	39/2 <sup>-</sup>	[M1]	0.00288	
1219.1 3	0.19 6	4617.85	29/2 <sup>+</sup>	3398.79	25/2 <sup>+</sup>	[E2]	0.00184	
1219.2 1	1.31 4	8126.03	43/2 <sup>+</sup>	6906.82	41/2 <sup>+</sup>	[M1]	0.00287	
1232.7 1	0.76 7	6181.27	35/2 <sup>+</sup>	4948.63	31/2 <sup>+</sup>	[E2]	0.00181	
1237.6 2	0.53 6	6081.48	35/2 <sup>-</sup>	4843.79	31/2 <sup>-</sup>	[E2]	0.00179	
1250.5 4	0.23 10	6833.58	37/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[M1]	0.00270	
1252.7 1	3.74 13	7874.04	41/2 <sup>-</sup>	6621.32	39/2 <sup>+</sup>	[E1]	8.03×10 <sup>-4</sup>	
<sup>x</sup> 1258 1	2.0							
1258.2 2	0.82 7	5265.00	31/2 <sup>-</sup>	4006.71	27/2 <sup>-</sup>	[E2]	1.74×10 <sup>-3</sup>	
1261.9 1	4.21 11	4843.79	31/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[E2] <sup>b</sup>	1.73×10 <sup>-3</sup>	Mult.: A <sub>2</sub> =0.28 12, A <sub>4</sub> =0.14 16 (1982Br13).
1286.7 1	5.49 19	6315.87	37/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	(E2) <sup>b</sup>	1.67×10 <sup>-3</sup>	E <sub>γ</sub> : γ ray replaced at this level by 2020Br06 from 6236 level (previously placed by 1982Br13). Mult.: A <sub>2</sub> =0.17 17, A <sub>4</sub> =-0.06 22 (1982Br13).
1293.0 1	0.43 6	6322.17	35/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[M1]	0.00251	
1298.1 1	0.36 4	8333.44	45/2 <sup>+</sup>	7035.34	41/2 <sup>+</sup>	[E2]	1.64×10 <sup>-3</sup>	
1329.0 3	0.11 3	7800.35	39/2 <sup>-</sup>	6471.46	39/2 <sup>-</sup>	[M1]	0.00236	
1352.6 1	0.59 6	7275.45	41/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[E2]	1.53×10 <sup>-3</sup>	
1354.0 1	0.15 3	7825.71	41/2 <sup>-</sup>	6471.46	39/2 <sup>-</sup>	[M1]	0.00227	
1373.5 1	0.15 2	6322.17	35/2 <sup>+</sup>	4948.63	31/2 <sup>+</sup>	[E2]	1.49×10 <sup>-3</sup>	
1390.0 1	9.67 31	4971.71	31/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	E2 <sup>ab</sup>	1.46×10 <sup>-3</sup>	α(K)exp=0.0012 (1982Ba46) Mult.: A <sub>2</sub> =0.22 6, A <sub>4</sub> =-0.07 7 (1982Br13). Mult.: A <sub>2</sub> =0.15 6 (1982Ba46).
1402.7 3	0.09 1	7718.56	39/2 <sup>-</sup>	6315.87	37/2 <sup>+</sup>	[E1]	7.55×10 <sup>-4</sup>	
1422.8 1	1.08 6	5652.56	33/2 <sup>-</sup>	4229.79	29/2 <sup>-</sup>	[E2]	1.41×10 <sup>-3</sup>	
1426.1 3	0.28 6	5118.09	29/2 <sup>-</sup>	3691.74	25/2 <sup>-</sup>	[E2]	1.40×10 <sup>-3</sup>	
1426.6 1	0.23 2	8333.44	45/2 <sup>+</sup>	6906.82	41/2 <sup>+</sup>	[E2]	1.40×10 <sup>-3</sup>	
<sup>x</sup> 1434.7 3	3.2							Mult.: A <sub>2</sub> =0.14 15, A <sub>4</sub> =0.11 19 (1982Br13).
1434.7 1	2.90 10	6463.91	37/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[E2]	1.39×10 <sup>-3</sup>	
1491.0 1	90.5 33	2488.18	17/2 <sup>+</sup>	997.10	13/2 <sup>+</sup>	E2 <sup>b</sup>	1.31×10 <sup>-3</sup>	Mult.: A <sub>2</sub> =0.23 1, A <sub>4</sub> =-0.06 2 (1982Br13).
1536.2 2	0.59 6	5118.09	29/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[M1]	1.77×10 <sup>-3</sup>	
1538.8 1	0.30 4	6567.89	37/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[E2]	1.26×10 <sup>-3</sup>	
1575.1 1	9.3 3	2572.15	19/2 <sup>-</sup>	997.10	13/2 <sup>+</sup>	[E3]	0.00217	Mult.: A <sub>2</sub> =0.36 3, A <sub>4</sub> =0.00 4 (1982Br13).
1668.2 1	0.15 3	6697.28	37/2 <sup>+</sup>	5029.10	33/2 <sup>+</sup>	[E2]	1.14×10 <sup>-3</sup>	
1683.3 1	21.8 8	5265.00	31/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	E2 <sup>a</sup>	1.13×10 <sup>-3</sup>	α(K)exp=0.0011 4 (1982Ba46) Mult.: A <sub>2</sub> =0.29 4, A <sub>4</sub> =-0.06 5 (1982Br13). Mult.: A <sub>2</sub> =0.20 10 (1982Ba46).
1709.8 3	0.08 3	7669.68	39/2 <sup>-</sup>	5959.42	35/2 <sup>-</sup>	[E2]	1.11×10 <sup>-3</sup>	
1723.0 3	0.08 2	7645.97	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	1.47×10 <sup>-3</sup>	

$\gamma(^{147}\text{Gd})$  (continued)

$E_\gamma$ †‡	$I_\gamma$ †h	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. #	$\alpha^i$	Comments
1795.2 5	0.07 2	7718.56	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	1.39×10 <sup>-3</sup>	
1803.2 1	0.30 3	7386.14	37/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[M1]	1.38×10 <sup>-3</sup>	
1857.6 1	0.56 6	5439.13	31/2 <sup>-</sup>	3581.72	27/2 <sup>-</sup>	[E2]	1.04×10 <sup>-3</sup>	
1877.5 1	0.70 4	7800.35	39/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[M1]	1.32×10 <sup>-3</sup>	
1902.7 1	0.89 4	7825.71	41/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[E2]	1.03×10 <sup>-3</sup>	
1951.1 1	6.79 24	7874.04	41/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	E2 <sup>ab</sup>	1.01×10 <sup>-3</sup>	Mult.: A <sub>2</sub> =0.20 28, A <sub>4</sub> =-0.04 36 (1982Br13). Mult.: A <sub>2</sub> =0.23 6 (1982Ba46).
1980.6 1	0.41 3	7903.57	41/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[E2]	1.01×10 <sup>-3</sup>	
1994.1 1	0.21 3	7917.09	41/2 <sup>-</sup>	5923.00	37/2 <sup>-</sup>	[E2]	1.00×10 <sup>-3</sup>	
2004.2 5	0.06 2	7386.14	37/2 <sup>-</sup>	5382.13	33/2 <sup>-</sup>	[E2]	1.00×10 <sup>-3</sup>	
2013.0 1	0.42 3	7596.10	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	1.00×10 <sup>-3</sup>	
2063.0 1	0.59 3	7645.97	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	9.94×10 <sup>-4</sup>	
2086.8 1	0.83 3	7669.68	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	9.91×10 <sup>-4</sup>	
2122.9 1	0.09 2	7705.92	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	9.88×10 <sup>-4</sup>	
2135.6 1	0.07 2	7718.56	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	9.87×10 <sup>-4</sup>	
2185.7 1	0.17 3	7768.69	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	9.85×10 <sup>-4</sup>	
2217.2 1	0.17 3	7800.35	39/2 <sup>-</sup>	5582.99	35/2 <sup>-</sup>	[E2]	9.84×10 <sup>-4</sup>	

† From 2020Br06 unless otherwise noted.

‡ Unplaced  $\gamma$ 's are from 1982Br13 unless noted otherwise.

# As given in 2020Br06, if not differently specified. Unless otherwise indicated, assignments are implied from  $\Delta J^\pi$  (which according to the evaluation standards are given under brackets in the table). Pure M1 assumed for  $\Delta J=1$  or 0,  $\Delta\pi$ =no transitions.

@ Unplaced gamma from 1982Ba46.

& From  $\alpha(\text{exp})$  in 2020Br06, deduced from intensity balance observed in their  $\gamma\gamma$ -coin data.

<sup>a</sup> From 1982Ba46 based on  $\gamma(\theta)$  and  $\alpha(\text{K})\text{exp}$  measurements normalized to the 997-keV E3.

<sup>b</sup> From  $\gamma(\theta)$  and  $\alpha(\text{exp})$  deduced from intensity balance considerations by 1982Br13.

<sup>c</sup> Identified as stretched E1 by 1979K104 from  $\gamma(\theta)$ .

<sup>d</sup> From 1979K104.

<sup>e</sup> Assigned by 1979K104 from  $\Delta J^\pi$  and  $T_{1/2}$ .

<sup>f</sup> Unobserved transitions, with its presence required by the  $\gamma\gamma$ -coincidence analysis, except for the 71.8 $\gamma$  observed in  $\gamma\gamma$ -coincidence. The photon intensities are from the estimated total transition intensities (2020Br06).

<sup>g</sup> Transitions used to normalize isomer decay intensity to 100.

<sup>h</sup> Absolute intensity per 100 decays.

<sup>i</sup> Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on  $\gamma$ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

<sup>j</sup> Placement of transition in the level scheme is uncertain.

<sup>x</sup>  $\gamma$  ray not placed in level scheme.



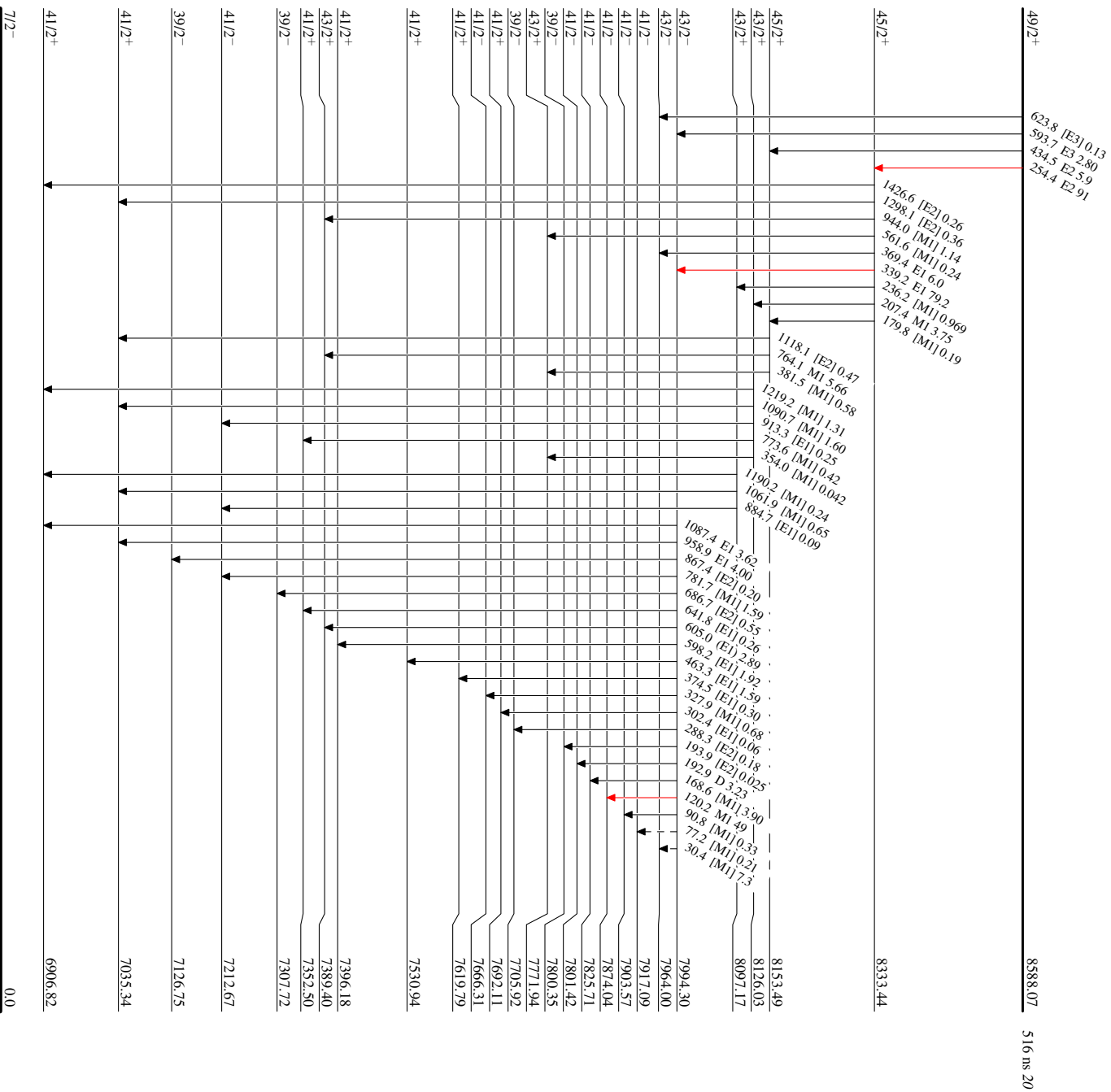
<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

Decay Scheme

Intensities: I<sub>γ+ε</sub> per 100 parent decays  
%IT=100.0

Legend

- I<sub>γ</sub> < 2% × I<sub>max</sub>
- I<sub>γ</sub> < 10% × I<sub>max</sub>
- I<sub>γ</sub> > 10% × I<sub>max</sub>
- - - γ Decay (Uncertain)



<sup>147</sup>Gd<sub>83</sub>

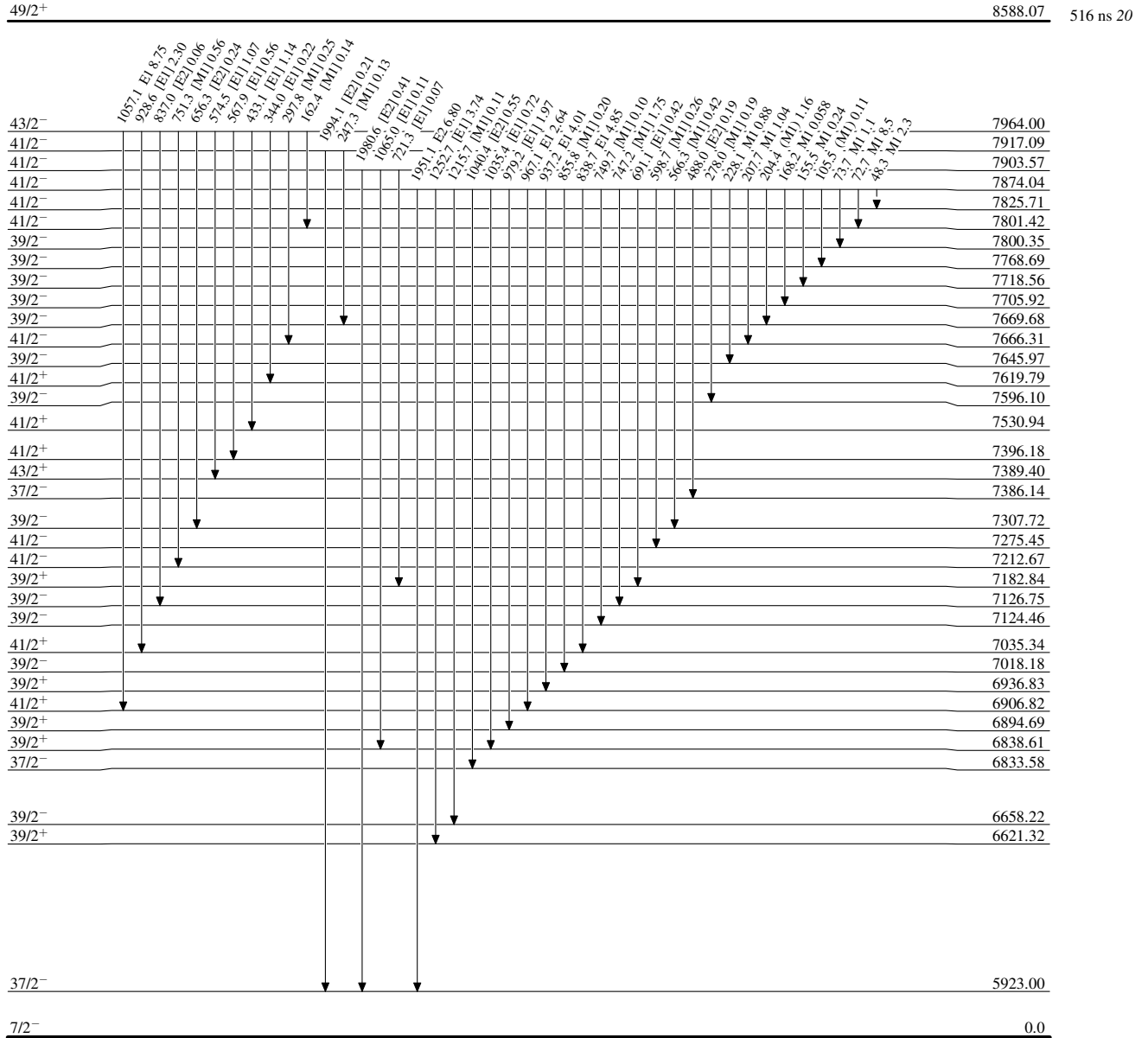
<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

Decay Scheme (continued)

Intensities: I<sub>(γ+ce)</sub> per 100 parent decays  
%IT=100.0

Legend

- I<sub>γ</sub> < 2% × I<sub>γ</sub><sup>max</sup>
- I<sub>γ</sub> < 10% × I<sub>γ</sub><sup>max</sup>
- I<sub>γ</sub> > 10% × I<sub>γ</sub><sup>max</sup>
- - - - - γ Decay (Uncertain)



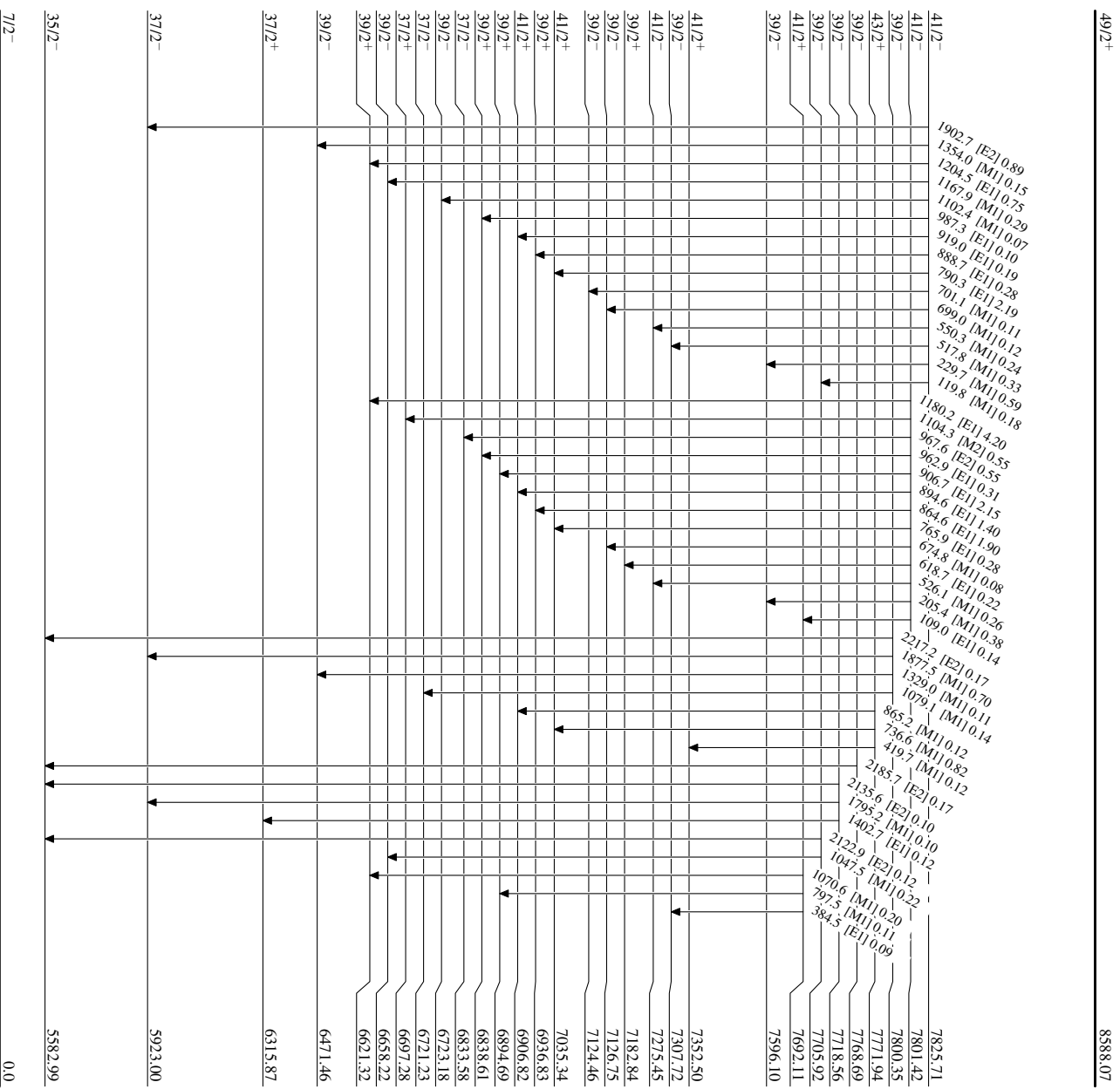
<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

Decay Scheme (continued)

Legend

Intensities:  $I_{\gamma+e}$  per 100 parent decays  
 $\%IT=100.0$

$\blackrightarrow$   $I_{\gamma} < 2\% \times I_{\gamma}^{max}$   
 $\blacktriangleleft$   $I_{\gamma} < 10\% \times I_{\gamma}^{max}$   
 $\blacktriangleright$   $I_{\gamma} > 10\% \times I_{\gamma}^{max}$



<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

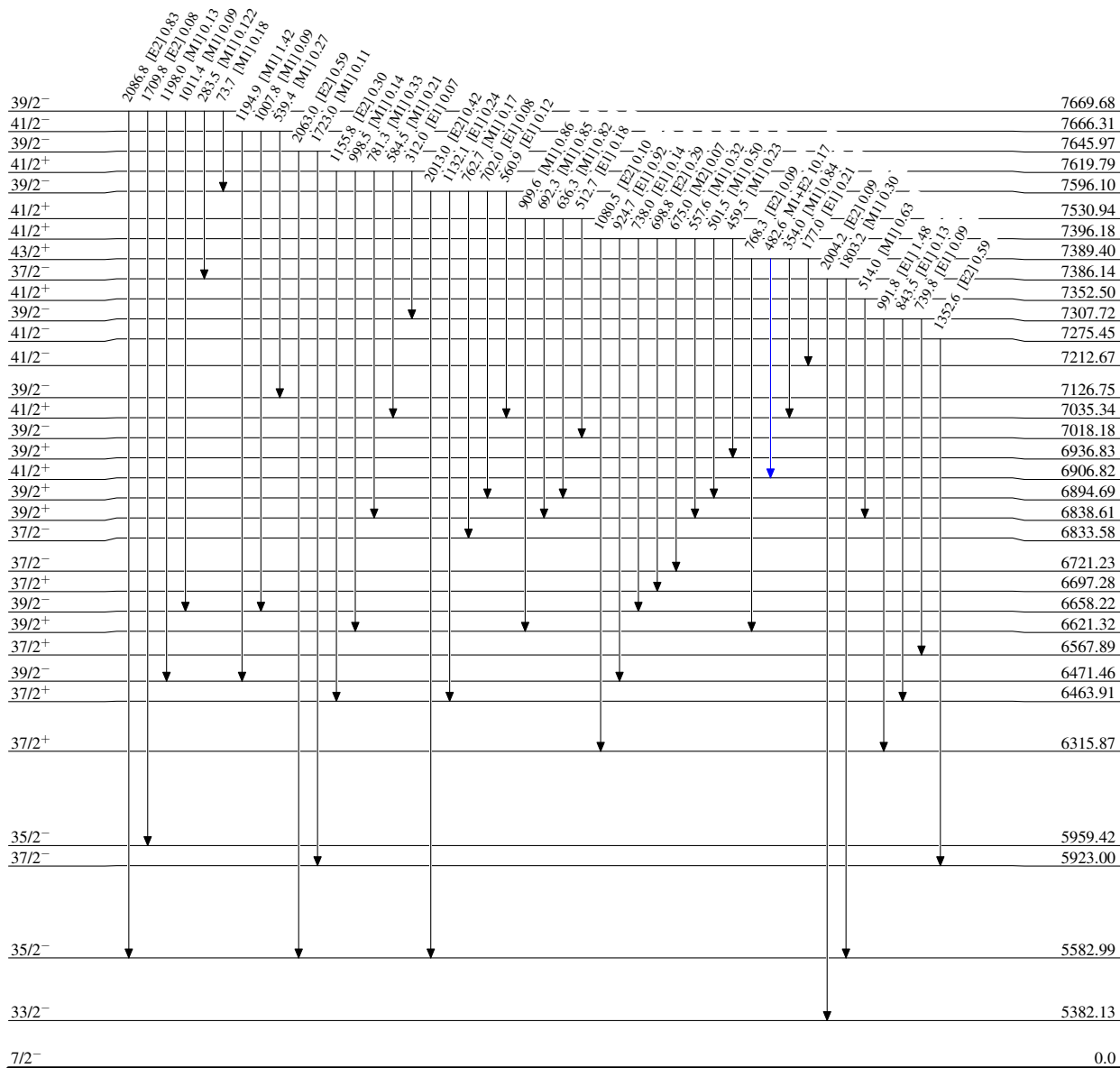
Decay Scheme (continued)

Legend

Intensities: I<sub>(γ+ce)</sub> per 100 parent decays  
%IT=100.0

- I<sub>γ</sub> < 2% × I<sub>γ</sub><sup>max</sup>
- I<sub>γ</sub> < 10% × I<sub>γ</sub><sup>max</sup>
- I<sub>γ</sub> > 10% × I<sub>γ</sub><sup>max</sup>

49/2<sup>+</sup> 8588.07 516 ns 20



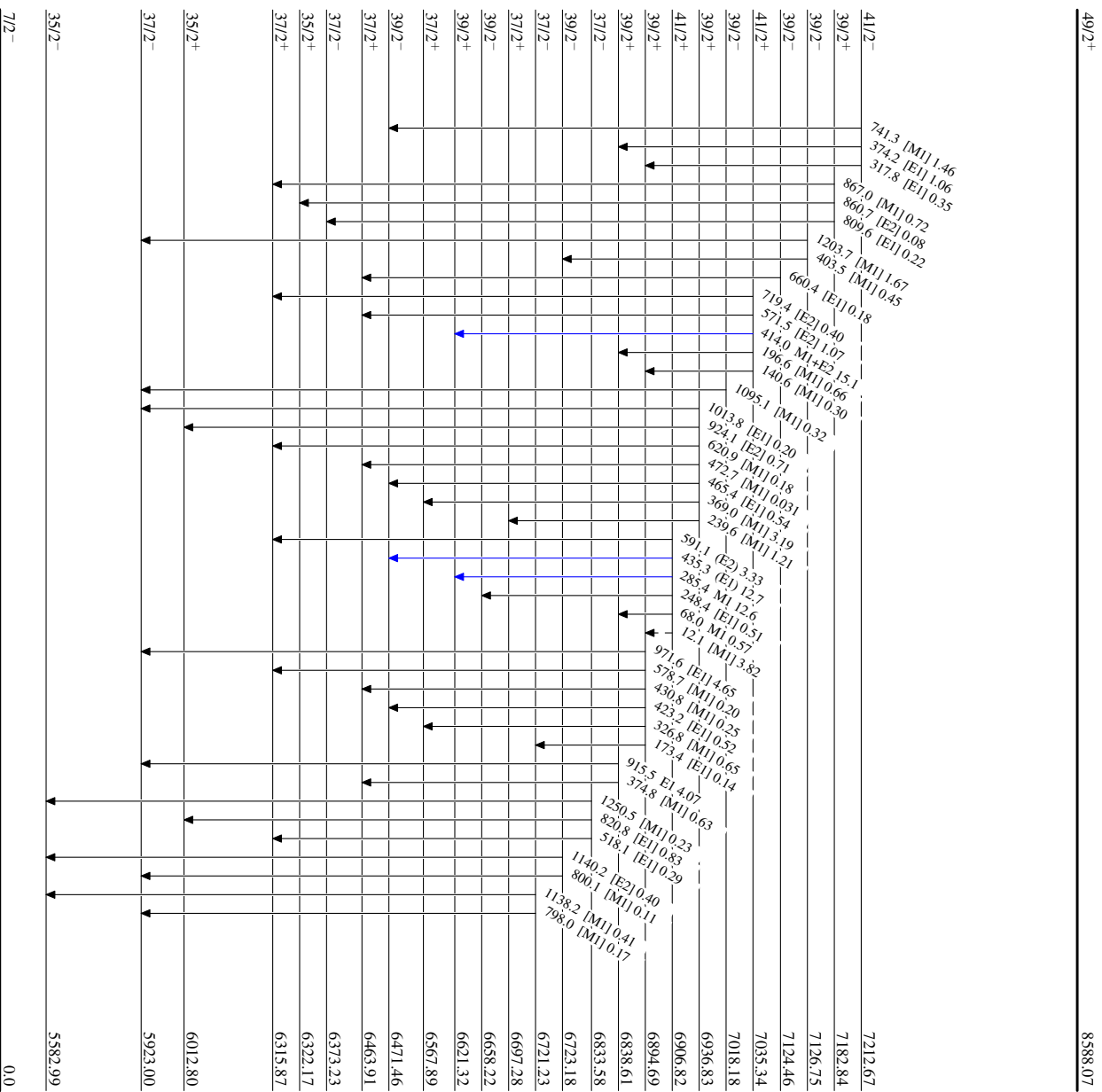
<sup>147</sup>Gd ITT decay (516 ns) 2020BR06,1982Ba46,1982BR13

Decay Scheme (continued)

Intensities: I<sub>(γ+ε)</sub> per 100 parent decays  
%IT=100.0

Legend

- I<sub>γ</sub> < 2% × I<sub>max</sub>
- I<sub>γ</sub> < 10% × I<sub>max</sub>
- I<sub>γ</sub> > 10% × I<sub>max</sub>
- - - γ Decay (Uncertain)



49/2+

8588.07

516 ns 20

7/2-

0.0

<sup>147</sup>Gd<sub>83</sub>  
<sup>64</sup>Gd<sub>83</sub>

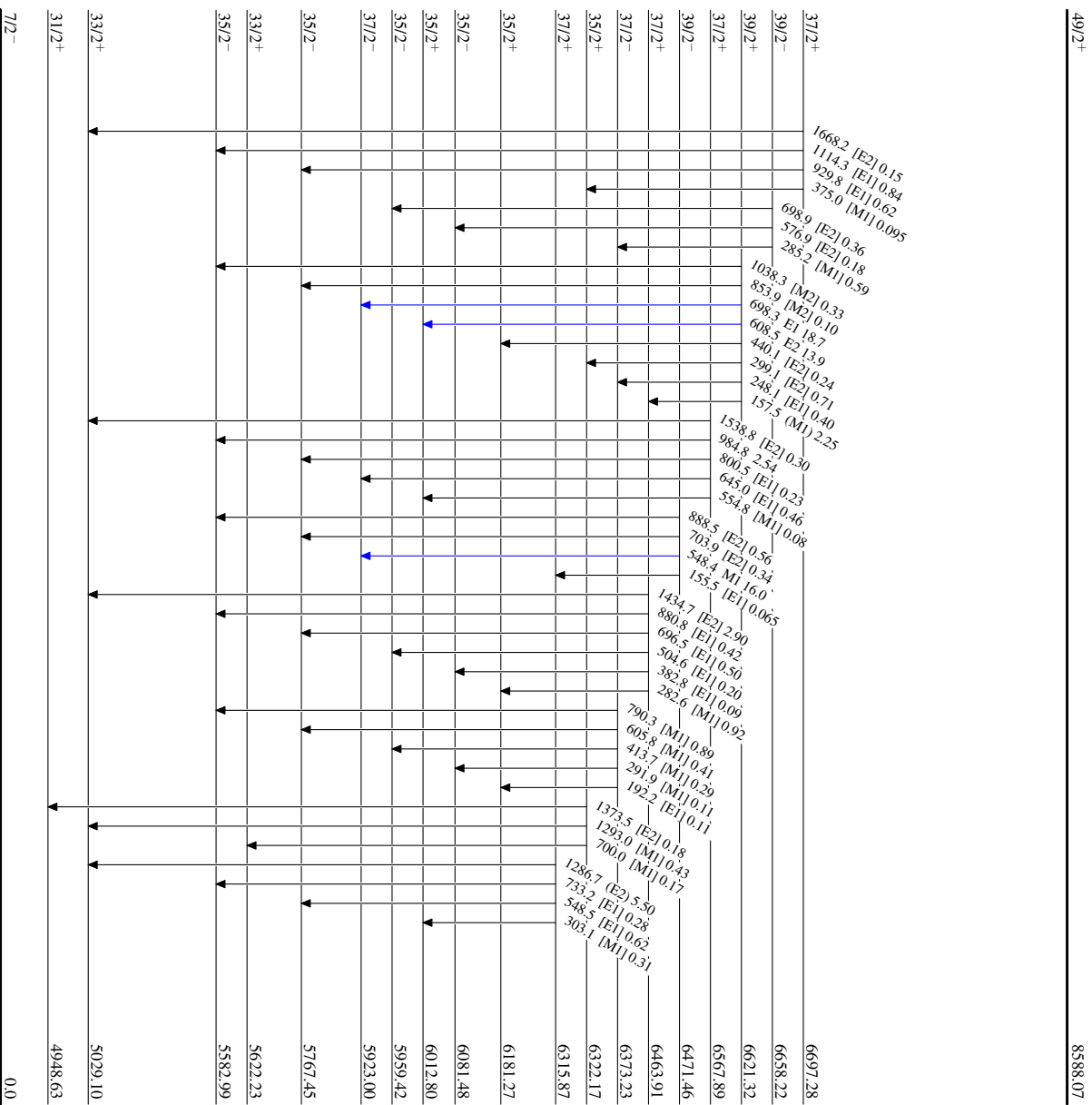
<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

Decay Scheme (continued)

Legend

Intensities: I<sub>γ</sub>(<sup>γ</sup>+<sup>e</sup>) per 100 parent decays  
 %IT=100.0

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



<sup>147</sup>Gd<sub>83</sub>

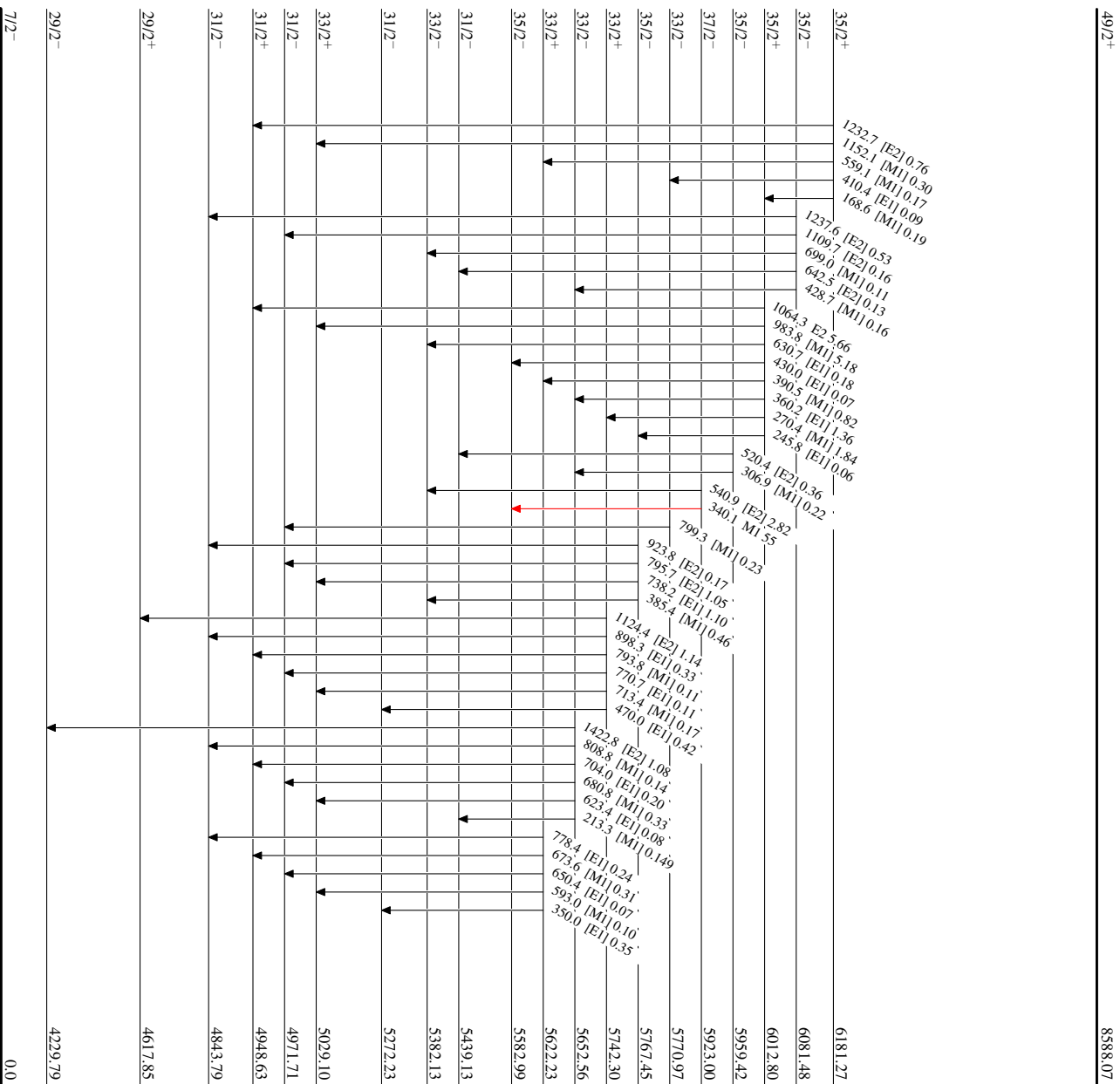
<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

Decay Scheme (continued)

Legend

Intensities:  $I_{\gamma+\alpha}$  per 100 parent decays  
 %IT=100.0

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



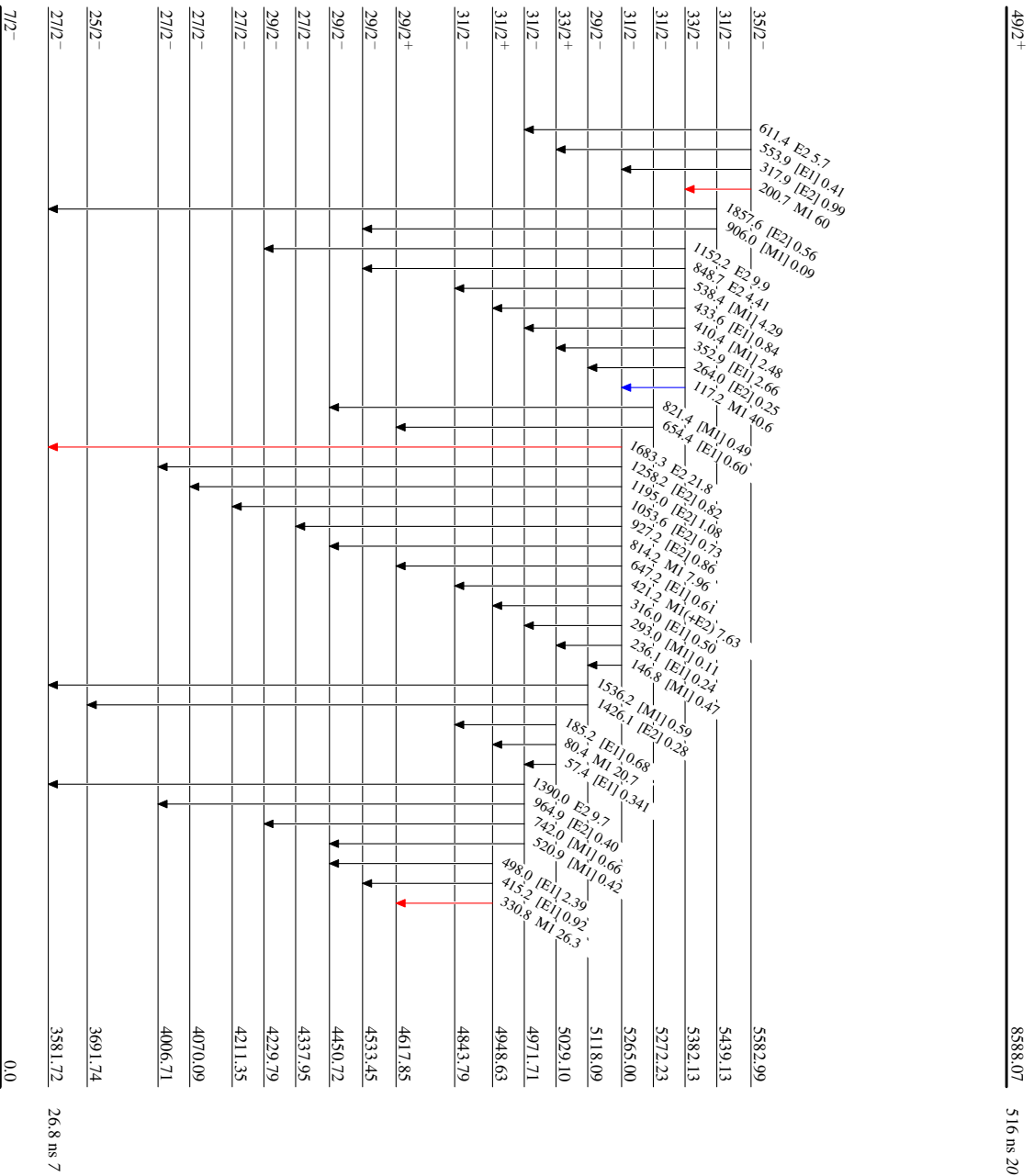
<sup>147</sup>Gd<sub>83</sub>

<sup>147</sup>Gd IT decay (516 ns) 2020BR06,1982Ba46,1982Br13

Decay Scheme (continued)

Intensities: I<sub>γ+α</sub> per 100 parent decays  
%IT=100.0

Legend  
 → I<sub>γ</sub> < 2% × I<sub>γmax</sub>  
 → I<sub>γ</sub> < 10% × I<sub>γmax</sub>  
 → I<sub>γ</sub> > 10% × I<sub>γmax</sub>





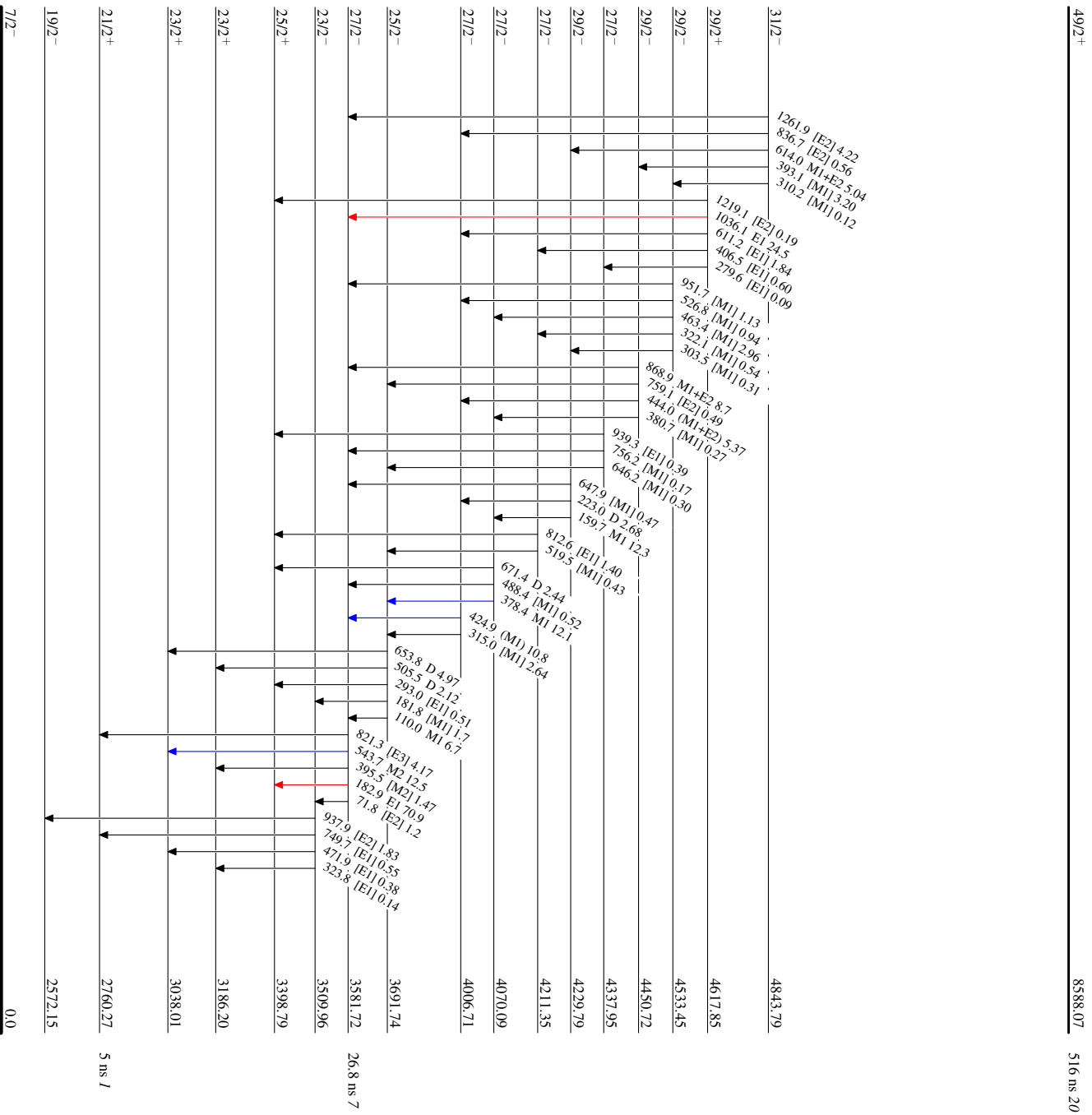
<sup>147</sup>Gd IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

Decay Scheme (continued)

Intensities: I<sub>γ+α<sub>β</sub></sub> Per 100 parent decays  
%IT=100.0

Legend

- I<sub>γ</sub> < 2% × I<sub>γmax</sub>
- I<sub>γ</sub> < 10% × I<sub>γmax</sub>
- I<sub>γ</sub> > 10% × I<sub>γmax</sub>



$^{147}\text{Gd}$  IT decay (516 ns) 2020Br06,1982Ba46,1982Br13

## Decay Scheme (continued)

Intensities:  $I_{(\gamma+ce)}$  per 100 parent decays  
%IT=100.0

## Legend

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

49/2<sup>+</sup>

8588.07

516 ns 20

