

$^{19}\text{F}(\text{n},\gamma)\text{E}=\text{th}$ **1996Ra04**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. R. Tilley, C. Cheves, J. Kelley, S. Raman, H. Weller		NP A636, 249 (1998)	21-Apr-1997

See table 2 of [1996Ra04](#) for more details. Multiply I_γ by 10.515 to obtain photons per 100 thermal captures.

 ^{20}F Levels

E(level)	J^π	E(level)	J^π	E(level)	J^π	E(level)
0.0	2 ⁺	2864.86 10	(3 ⁻)	4277.09 4	(1,2) ⁺	5810.1 4
656.018 20	3 ⁺	2966.109 24	3 ⁺	4371.47 11	(2 ⁺)	5936.128 23
822.734 22	4 ⁺	3171.69 14	(1 ⁺)	4591.72 7		5939.10 14
983.59 3	1 ⁻	3488.409 23	1 ⁺	4892.76 17		6017.784 20
1056.821 23	1 ⁺	3526.31 4	0 ⁺	5226.1 4		6044.92 3
1309.195 21	2 ⁻	3586.545 22	(1,2) ⁺	5282.79 10		6299.1 3
1843.802 21	2 ⁻	3589.80 4		5319.17 4		6601.352 17
1970.83 4	(3 ⁻)	3680.17 4	1,2	5465.89 17		
2043.982 23	2 ⁺	3965.07 4	1 ⁺	5555.34 4		
2194.301 22	(3 ⁺)	4082.17 4	(1) ⁺	5623.13 6		

 $\gamma(^{20}\text{F})$

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
166.78 5	0.44 4	822.734	4 ⁺	656.018	3 ⁺
252.65 23	0.008 2	1309.195	2 ⁻	1056.821	1 ⁺
302.2 3	0.005 2	6601.352		6299.1	
325.73 14	0.041 3	1309.195	2 ⁻	983.59	1 ⁻
534.60 8	0.013 2	1843.802	2 ⁻	1309.195	2 ⁻
556.41 3	0.202 13	6601.352		6044.92	
583.55 3	3.60 15	6601.352		6017.784	
620.44 5	0.023 2	3586.545	(1,2) ⁺	2966.109	3 ⁺
653.2 3	0.020 3	1309.195	2 ⁻	656.018	3 ⁺
656.00 3	1.98 10	656.018	3 ⁺	0.0	2 ⁺
661.63 99	0.151 20	1970.83	(3 ⁻)	1309.195	2 ⁻
662.24 99	0.102 15	6601.352		5939.10	
665.20 3	1.49 8	6601.352		5936.128	
670.1 6	0.003 1	2864.86	(3 ⁻)	2194.301	(3 ⁺)
691.4 3	0.004 2	4371.47	(2 ⁺)	3680.17	1,2
734.84 12	0.006 2	2043.982	2 ⁺	1309.195	2 ⁻
771.71 10	0.008 2	2966.109	3 ⁺	2194.301	(3 ⁺)
791.2 4	0.004 1	6601.352		5810.1	
793.36 19	0.007 2	3965.07	1 ⁺	3171.69	(1 ⁺)
820.9 4	0.005 2	2864.86	(3 ⁻)	2043.982	2 ⁺
822.69 4	0.219 12	822.734	4 ⁺	0.0	2 ⁺
885.0 3	0.005 1	2194.301	(3 ⁺)	1309.195	2 ⁻
894.1 5	0.003 1	2864.86	(3 ⁻)	1970.83	(3 ⁻)
978.19 6	0.061 10	6601.352		5623.13	
983.53 4	1.16 6	983.59	1 ⁻	0.0	2 ⁺
987.20 99	0.004 2	1970.83	(3 ⁻)	983.59	1 ⁻
1020.9 4	0.003 1	2864.86	(3 ⁻)	1843.802	2 ⁻
1046.00 4	0.177 9	6601.352		5555.34	
1056.78 3	0.94 4	1056.821	1 ⁺	0.0	2 ⁺
1135.38 17	0.009 2	6601.352		5465.89	
1148.05 4	0.264 15	1970.83	(3 ⁻)	822.734	4 ⁺
1187.70 6	0.045 3	1843.802	2 ⁻	656.018	3 ⁺
1282.14 4	0.086 5	6601.352		5319.17	

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$^{19}\text{F}(\text{n},\gamma)\text{E=th}$ **1996Ra04** (continued) $\gamma(^{20}\text{F})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1306.2 3	0.009 2	4892.76		3586.545	(1,2) ⁺
1309.17 3	0.76 3	1309.195	2 ⁻	0.0	2 ⁺
1318.52 10	0.023 2	6601.352		5282.79	
1371.53 4	0.145 9	2194.301	(3 ⁺)	822.734	4 ⁺
1375.2 4	0.005 2	6601.352		5226.1	
1387.90 3	0.83 3	2043.982	2 ⁺	656.018	3 ⁺
1392.22 5	0.078 6	3586.545	(1,2) ⁺	2194.301	(3 ⁺)
1542.50 4	0.274 12	3586.545	(1,2) ⁺	2043.982	2 ⁺
1545.87 16	0.013 2	3589.80		2043.982	2 ⁺
1555.0 4	0.005 1	2864.86	(3 ⁻)	1309.195	2 ⁻
1644.50 8	0.073 6	3488.409	1 ⁺	1843.802	2 ⁻
1708.52 22	0.026 3	6601.352		4892.76	
1742.7 3	0.006 2	3586.545	(1,2) ⁺	1843.802	2 ⁻
1836.50 22	0.016 2	3680.17	1,2	1843.802	2 ⁻
1843.74 3	0.61 3	1843.802	2 ⁻	0.0	2 ⁺
1853.96 22	0.013 2	5936.128		4082.17	(1) ⁺
1935.50 5	0.073 5	6017.784		4082.17	(1) ⁺
1970.73 99	0.090 9	1970.83	(3 ⁻)	0.0	2 ⁺
1970.95 99	0.010 3	5936.128		3965.07	1 ⁺
2009.52 7	0.047 4	6601.352		4591.72	
2038.08 18	0.015 2	4082.17	(1) ⁺	2043.982	2 ⁺
2042.0 6	0.005 2	2864.86	(3 ⁻)	822.734	4 ⁺
2043.89 6	0.068 5	2043.982	2 ⁺	0.0	2 ⁺
2052.8 6	0.005 1	6017.784		3965.07	1 ⁺
2079.72 21	0.011 2	6044.92		3965.07	1 ⁺
2120.95 16	0.014 2	3965.07	1 ⁺	1843.802	2 ⁻
2143.26 3	0.196 9	2966.109	3 ⁺	822.734	4 ⁺
2179.09 4	0.091 6	3488.409	1 ⁺	1309.195	2 ⁻
2187.96 20	0.013 2	3171.69	(1 ⁺)	983.59	1 ⁻
2194.16 3	0.133 6	2194.301	(3 ⁺)	0.0	2 ⁺
2208.5 7	0.002 1	2864.86	(3 ⁻)	656.018	3 ⁺
2229.8 4	0.052 3	6601.352		4371.47	(2 ⁺)
2232.9 9	0.021 3	4277.09	(1,2) ⁺	2043.982	2 ⁺
2255.82 4	0.087 5	5936.128		3680.17	1,2
2309.96 6	0.041 4	2966.109	3 ⁺	656.018	3 ⁺
2324.11 3	0.117 5	6601.352		4277.09	(1,2) ⁺
2337.58 14	0.014 3	6017.784		3680.17	1,2
2346.30 16	0.021 4	5936.128		3589.80	
2349.55 13	0.031 3	5936.128		3586.545	(1,2) ⁺
2352.44 21	0.017 3	5939.10		3586.545	(1,2) ⁺
2370.88 21	0.008 2	3680.17	1,2	1309.195	2 ⁻
2427.83 4	0.190 7	6017.784		3589.80	
2431.08 99	0.35 3	6017.784		3586.545	(1,2) ⁺
2431.43 99	0.07 3	3488.409	1 ⁺	1056.821	1 ⁺
2447.58 4	0.141 7	5936.128		3488.409	1 ⁺
2458.0 4	0.006 1	6044.92		3586.545	(1,2) ⁺
2469.34 4	0.197 8	3526.31	0 ⁺	1056.821	1 ⁺
2504.54 18	0.038 4	3488.409	1 ⁺	983.59	1 ⁻
2519.05 6	0.070 5	6601.352		4082.17	(1) ⁺
2529.20 99	0.58 3	6017.784		3488.409	1 ⁺
2529.55 99	0.09 3	3586.545	(1,2) ⁺	1056.821	1 ⁺
2556.35 15	0.016 3	6044.92		3488.409	1 ⁺
2600.3 6	0.004 2	5465.89		2864.86	(3 ⁻)
2602.75 9	0.035 3	3586.545	(1,2) ⁺	983.59	1 ⁻
2623.18 8	0.044 3	3680.17	1,2	1056.821	1 ⁺
2636.11 5	0.097 5	6601.352		3965.07	1 ⁺

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$^{19}\text{F}(\text{n},\gamma)\text{E=th}$ **1996Ra04** (continued) $\gamma(^{20}\text{F})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
2655.74 6	0.078 6	3965.07	1 ⁺	1309.195	2 ⁻
2690.5 3	0.006 1	5555.34		2864.86	(3 ⁻)
2697.9 5	0.004 1	4892.76		2194.301	(3 ⁺)
2864.68 13	0.016 4	2864.86	(3 ⁻)	0.0	2 ⁺
2921.01 8	0.094 5	6601.352		3680.17	1,2
2930.31 10	0.086 5	3586.545	(1,2) ⁺	656.018	3 ⁺
2933.76 25	0.023 3	3589.80		656.018	3 ⁺
2965.90 9	0.091 5	2966.109	3 ⁺	0.0	2 ⁺
2969.7 4	0.016 3	5936.128		2966.109	3 ⁺
2981.25 18	0.035 4	3965.07	1 ⁺	983.59	1 ⁻
3014.58 3	0.405 16	6601.352		3586.545	(1,2) ⁺
3023.90 99	0.032 4	3680.17	1,2	656.018	3 ⁺
3025.10 99	0.076 5	4082.17	(1) ⁺	1056.821	1 ⁺
3051.43 4	0.297 12	6017.784		2966.109	3 ⁺
3070.9 3	0.020 3	5936.128		2864.86	(3 ⁻)
3074.81 6	0.189 8	6601.352		3526.31	0 ⁺
3098.1 4	0.007 2	4082.17	(1) ⁺	983.59	1 ⁻
3112.72 6	0.240 9	6601.352		3488.409	1 ⁺
3152.1 4	0.014 3	6017.784		2864.86	(3 ⁻)
3219.89 12	0.061 4	4277.09	(1,2) ⁺	1056.821	1 ⁺
3293.23 22	0.026 3	4277.09	(1,2) ⁺	983.59	1 ⁻
3387.56 11	0.061 5	4371.47	(2 ⁺)	983.59	1 ⁻
3475.3 4	0.005 1	5319.17		1843.802	2 ⁻
3488.13 4	0.72 3	3488.409	1 ⁺	0.0	2 ⁺
3534.4 4	0.014 3	4591.72		1056.821	1 ⁺
3578.6 5	0.009 2	5623.13		2043.982	2 ⁺
3586.23 6	0.290 12	3586.545	(1,2) ⁺	0.0	2 ⁺
3589.47 8	0.178 7	3589.80		0.0	2 ⁺
3607.8 3	0.021 3	4591.72		983.59	1 ⁻
3679.91 23	0.087 6	3680.17	1,2	0.0	2 ⁺
3711.0 5	0.012 3	5555.34		1843.802	2 ⁻
3741.44 11	0.058 5	5936.128		2194.301	(3 ⁺)
3823.05 9	0.106 6	6017.784		2194.301	(3 ⁺)
3891.39 25	0.018 3	5936.128		2043.982	2 ⁺
3894.2 4	0.012 3	5939.10		2043.982	2 ⁺
3964.85 4	0.441 16	5936.128		1970.83	(3 ⁻)
3973.47 20	0.024 3	6017.784		2043.982	2 ⁺
4009.3 5	0.010 3	5319.17		1309.195	2 ⁻
4046.71 23	0.036 3	6017.784		1970.83	(3 ⁻)
4070.0 6	0.007 2	4892.76		822.734	4 ⁺
4081.77 10	0.054 4	4082.17	(1) ⁺	0.0	2 ⁺
4092.2 4	0.017 3	5936.128		1843.802	2 ⁻
4095.01 23	0.028 3	5939.10		1843.802	2 ⁻
4173.54 5	0.167 6	6017.784		1843.802	2 ⁻
4200.56 7	0.108 6	6044.92		1843.802	2 ⁻
4225.8 7	0.006 1	5282.79		1056.821	1 ⁺
4245.65 8	0.093 5	5555.34		1309.195	2 ⁻
4262.5 9	0.003 1	5319.17		1056.821	1 ⁺
4313.29 25	0.018 3	5623.13		1309.195	2 ⁻
4335.09 13	0.047 4	5319.17		983.59	1 ⁻
4556.81 4	0.522 20	6601.352		2043.982	2 ⁺
4626.50 99	0.008 2	5936.128		1309.195	2 ⁻
4630.6 9	0.006 1	6601.352		1970.83	(3 ⁻)
4639.0 4	0.023 4	5623.13		983.59	1 ⁻
4708.19 12	0.052 4	6017.784		1309.195	2 ⁻
4735.22 10	0.054 4	6044.92		1309.195	2 ⁻

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$^{19}\text{F}(\text{n},\gamma)\text{E=th}$ **1996Ra04** (continued) $\gamma(^{20}\text{F})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
4757.02 5	0.189 8	6601.352		1843.802	2 ⁻	5318.32 25	0.019 3	5319.17		0.0	2 ⁺
4878.8 6	0.009 2	5936.128		1056.821	1 ⁺	5360.93 10	0.119 5	6017.784		656.018	3 ⁺
4899.2 9	0.007 2	5555.34		656.018	3 ⁺	5543.67 4	0.410 16	6601.352		1056.821	1 ⁺
4951.91 25	0.059 6	5936.128		983.59	1 ⁻	5554.59 11	0.052 4	5555.34		0.0	2 ⁺
4954.5 7	0.021 3	5939.10		983.59	1 ⁻	5616.82 7	0.138 6	6601.352		983.59	1 ⁻
4960.3 4	0.027 3	6017.784		1056.821	1 ⁺	5622.5 6	0.008 2	5623.13		0.0	2 ⁺
5033.50 4	0.620 24	6017.784		983.59	1 ⁻	5935.10 11	0.097 10	5936.128		0.0	2 ⁺
5279.27 10	0.422 20	5936.128		656.018	3 ⁺	5938.1 9	0.011 3	5939.10		0.0	2 ⁺
5282.1 6	0.008 3	5282.79		0.0	2 ⁺	6016.72 6	0.94 4	6017.784		0.0	2 ⁺
5291.40 6	0.236 10	6601.352		1309.195	2 ⁻	6600.08 8	0.94 4	6601.352		0.0	2 ⁺

[†] For intensity per 100 neutron captures, multiply by 10.515.

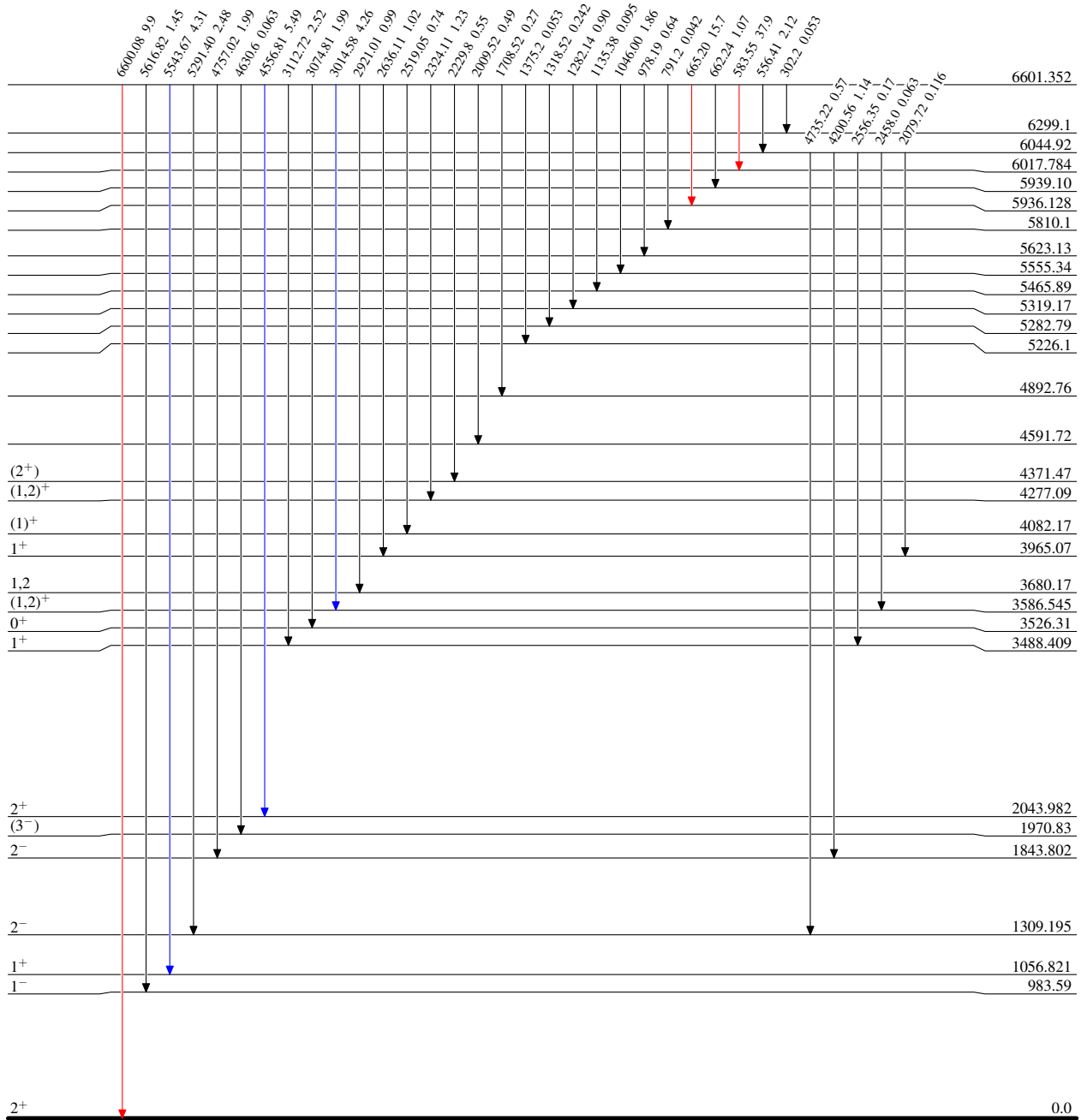
$^{19}\text{F}(n,\gamma)$ E=th 1996Ra04

Level Scheme

Intensities: I_γ per 100 neutron captures

Legend

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






$^{20}_{9}\text{F}_{11}$

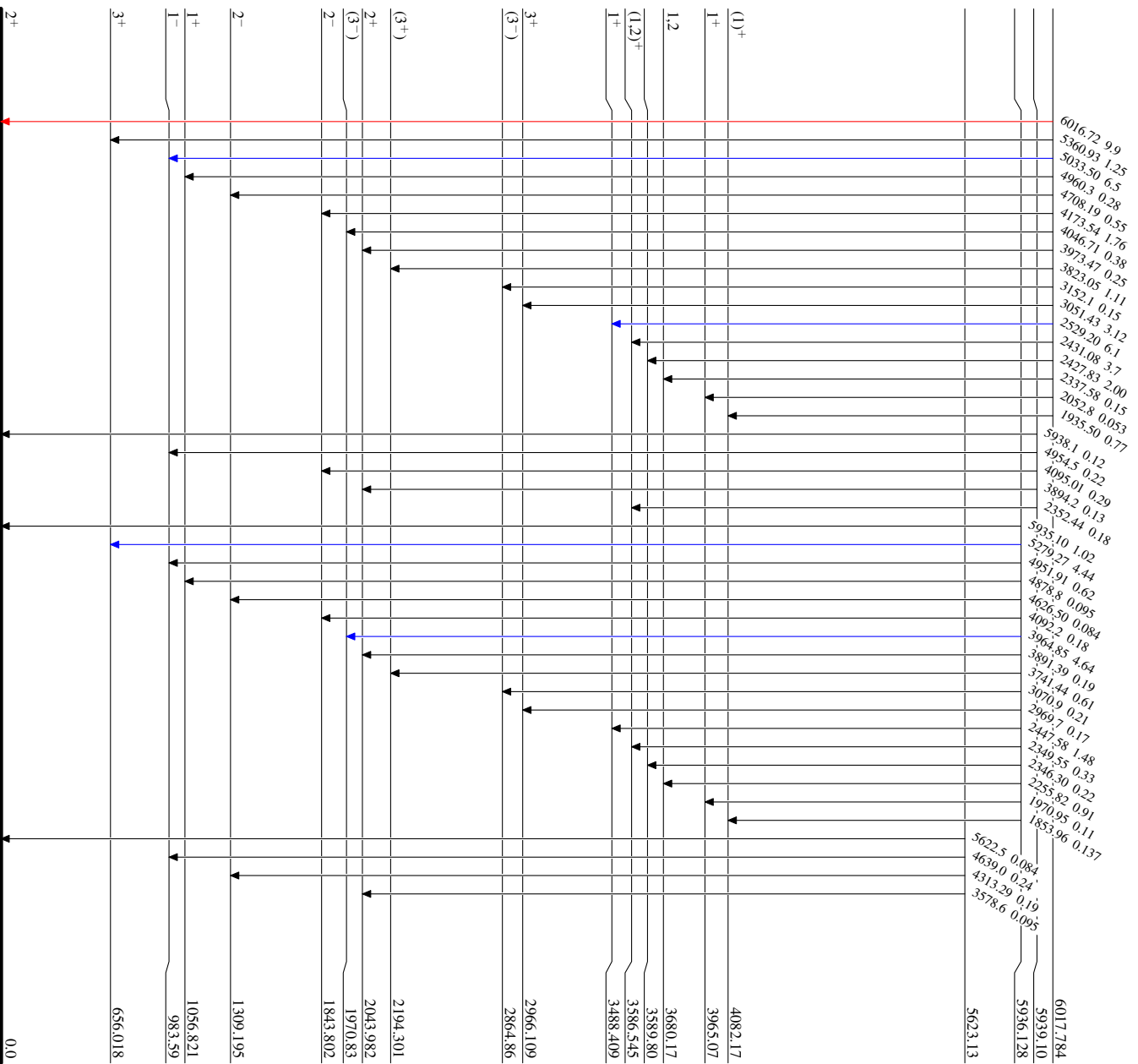
¹⁹F(n, γ)E=th 1996Ra04

Level Scheme (continued)

Intensities: I _{γ} per 100 neutron captures

Legend

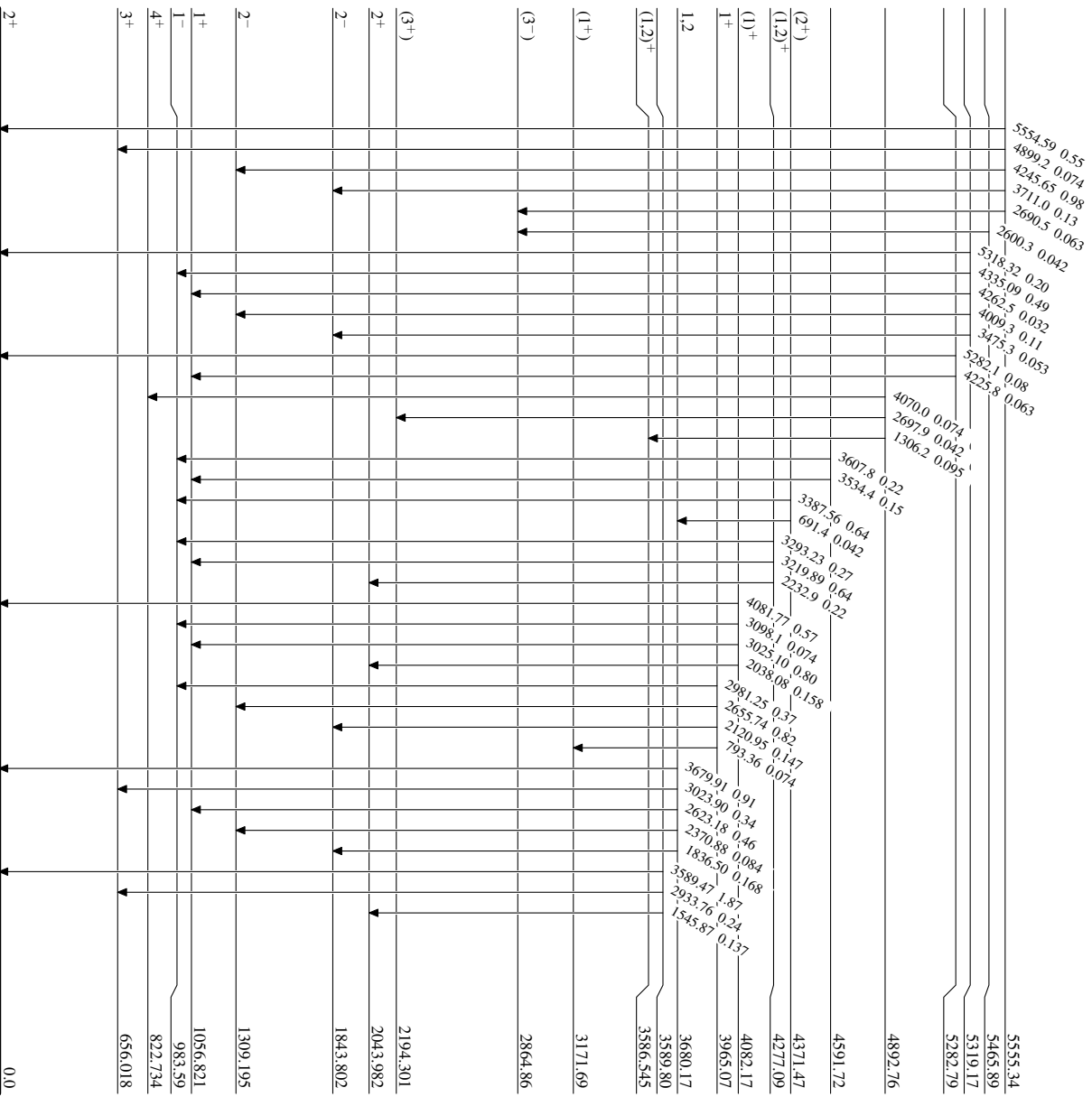
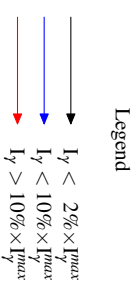
-  I _{γ} < 2% × I_{max}
-  I _{γ} < 10% × I_{max}
-  I _{γ} > 10% × I_{max}

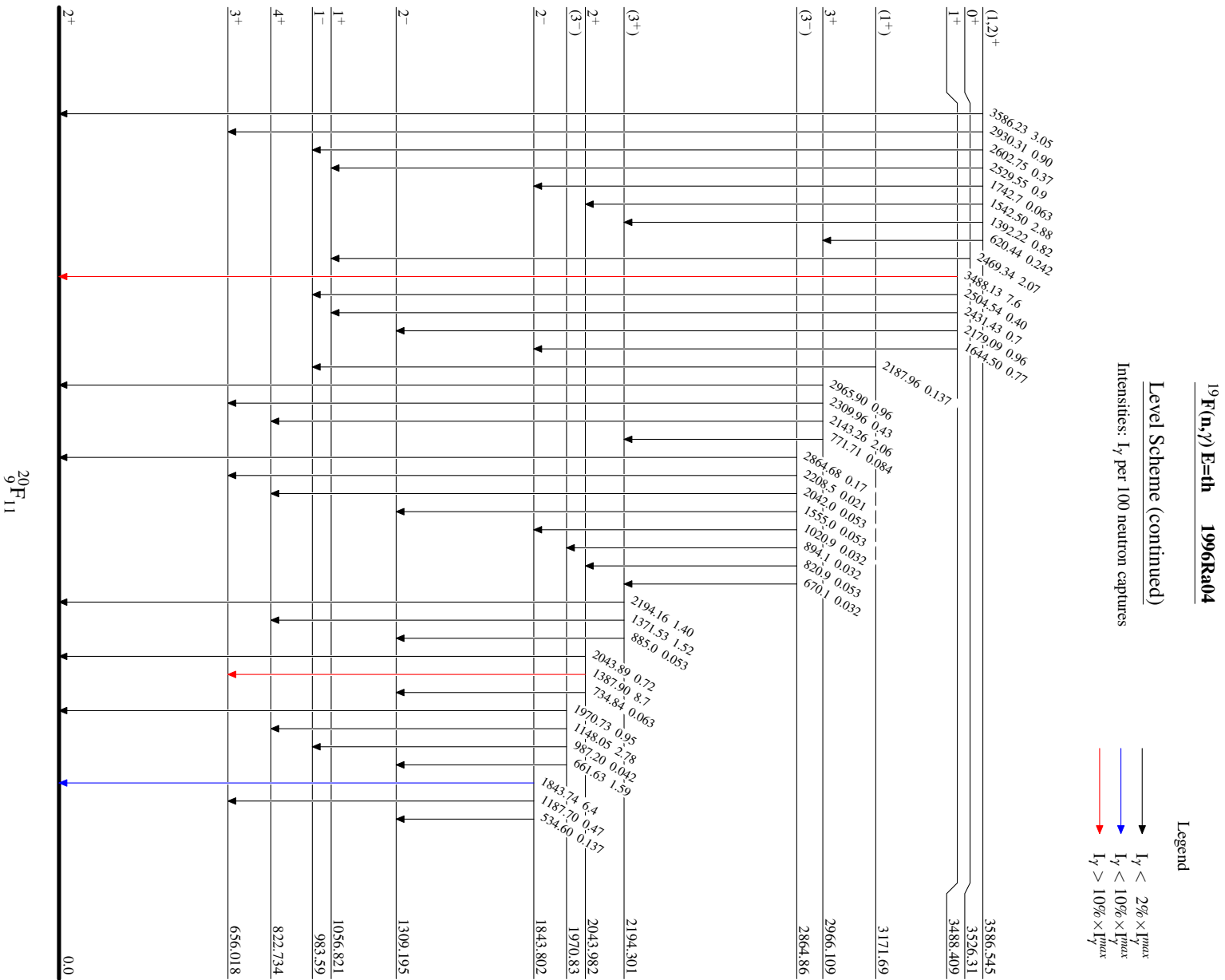


¹⁹F(n,γ)E=th 1996Ra04

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures





${}^{19}\text{F}(n,\gamma)\text{E=th}$ 1996Ra04

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

Legend

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

