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Thermal-Neutron Capture for A = 26-35

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IAEA NUCLEAR DATA SECTION, WAGRAMER STRASSE 5, A-1400 VIENNA

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Abstract: The prompt gamma-ray data of thermal- neutron captures for nuclear mass number A=26-35 had been evaluated and published in "ATOMIC DATA AND NUCLEAR DATA TABLES, 26, 511 (1981)". Since that time the many experimental data of the thermal-neutron captures have been measured and published. The update of the evaluated prompt gamma-ray data is very necessary for use in PGAA of high-resolution analytical prompt gamma-ray spectroscopy. Besides, the evaluation is also very needed in the Evaluated Nuclear Structure Data File, ENSDF, because there are no prompt gamma-ray data in ENSDF. The levels, prompt gamma-rays and decay schemes of thermal-neutron captures for nuclides (26Mg, 27Al, 28Si, 29Si, 30Si, 31P, 32S, 33S, 34S, and 35Cl) with nuclear mass number A=26-35 have been evaluated on the basis of all experimental data. The normalization factors, from which absolute prompt gamma-ray intensity can be obtained, and necessary comments are given in the text. The ENSDF format has been adopted in this evaluation. The physical check (intensity balance and energy balance) of evaluated thermal-neutron capture data has been done. The evaluated data have been put into Evaluated Nuclear Structure Data File, ENSDF. This evaluation may be considered as an update of the prompt gamma-ray from thermal-neutron capture data tables as published in "ATOMIC DATA AND NUCLEAR DATA TABLES, 26, 511 (1981)".

Cutoff Date: March 2001; all references entered into the Nuclear Science References File, NSRF, and private communications have been considered.

$^{27}_{12}Mg_{15}$

^{26}Mg(n,γ) E=thermal 92Wa06

Other: 82Hu02.
Target Jπ=0+.
92Wa06: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode; deduced neutron separation energy S(n)=6443.40 keV *5*.
Other measured S(n)=6443.39 keV *55* (82Hu02).
Evaluated S(n)=6443.35 keV *4* (95Au04).
Measured thermal–neutron capture cross section, σ(n,γ)=39.0 mb *8* (92Wa06).

^{27}Mg Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	1/2+	9.458 min *12*	%β⁻=100.
984.92 *3*	3/2+	0.98 ps *7*	
1698.63 *5*	5/2+	0.98 ps *8*	
1940.35 *8*	5/2+	0.76 ps *14*	
3476.33 *6*	1/2+	<7 fs	
3491.47 *13*	(3/2,5/2)+	<10 fs	
3561.56 *3*	3/2−	<7 fs	
3787.39 *6*	3/2+	<17 fs	
4828.14 *4*	(1/2,3/2)−	<7 fs	
5028.58 *15*	1/2+	<30 fs	
5925.93 *18*		35 fs *30*	
(6443.35 *4*)	1/2+		E(level): from evaluated s(n) (95Au04). Jπ: from s–wave neutron capture. Observed deexcitation intensity is 101% of g.s. feeding.

† From adopted levels, except as noted.
‡ From Eγ's using least–squares fit to data, except as noted.

γ(^{27}Mg)

All data are from 92Wa06, except as noted.
Iγ normalization: renormalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
241.6 *4*	1940.35	0.08 *3*	(M1)		σ(n,γ)=0.03 mb *1*.
517.3 *3*	(6443.35)	0.62 *8*			σ(n,γ)=0.24 mb *3*.
713.7@	1698.63	<0.08			σ(n,γ)<0.03mb.
955.45 *8*	1940.35	0.67 *8*	M1+E2	−0.08 *6*	σ(n,γ)=0.26 mb *3*.
984.91 *3*	984.92	15.8 *8*	M1+E2	+0.22 *2*	σ(n,γ)=6.1 mb *3*.
1040.7@	4828.14	<0.08			σ(n,γ)<0.03 mb.
1266.65 *18*	4828.14	0.90 *8*	(M1)		σ(n,γ)=0.35 mb *3*.
1336.80 *20*	4828.14	0.44 *6*	(E1)		σ(n,γ)=0.17 mb *2*.
1351.86 *8*	4828.14	0.85 *8*	(E1)		σ(n,γ)=0.33 mb *3*.
1414.95 *18*	(6443.35)	0.44 *6*			σ(n,γ)=0.17 mb *2*.
1467.3 *5*	5028.58	0.08 *3*	(E1)		σ(n,γ)=0.03 mb *1*.
(1537.2)	5028.58	≈0.02584			σ(n,γ)≈0.01 mb.
1552.8 *7*	5028.58	0.05 *3*	M1		σ(n,γ)=0.02 mb *1*.
1615.28 *5*	(6443.35)	17.1 *8*			σ(n,γ)=6.6 mb *3*.
1621.2@	3561.56	<0.08			σ(n,γ)<0.03 mb.
1698.58 *5*	1698.63	2.87 *18*	(E2+M3)	≈0.0	σ(n,γ)=1.11mb 7.
1792.8§ *3*	3491.47	0.08 *3*			σ(n,γ)=0.03 mb *1*.
1846.95 *18*	3787.39	0.67 *8*	M1+E2	−0.0 *3*	σ(n,γ)=0.26 mb *3*.
1862.93 *10*	3561.56	1.40 *11*	(E1)		σ(n,γ)=0.54 mb *5*.
1939.6 *4*	1940.35	0.23 *6*	(E2+M3)	≈0.0	σ(n,γ)=0.09 mb *2*.
2088.66 *11*	3787.39	1.06 *8*			σ(n,γ)=0.41 mb *3*.
(2490.7)	3476.33	0.05 *3*			σ(n,γ)=0.02 mb *1*.
2506.57 *23*	3491.47	0.39 *6*			σ(n,γ)=0.15 mb *2*.
2576.50 *6*	3561.56	3.51 *21*	(E1)		σ(n,γ)=1.36 mb *8*.
2655.86 *6*	(6443.35)	3.72 *18*			σ(n,γ)=1.44 mb *7*.
2881.67 *4*	(6443.35)	66.2 *21*			σ(n,γ)=25.6 mb *8*.
2887.6@	4828.14	<0.08			σ(n,γ)<0.03 mb.
2951.4 *4*	(6443.35)	0.26 *6*			σ(n,γ)=0.10 mb *2*.
2966.77 *22*	(6443.35)	2.20 *16*			σ(n,γ)=0.85 mb *6*.
3129.3@	4828.14	<0.08			σ(n,γ)<0.03 mb.

Continued on next page (footnotes at end of table)

$^{27}_{12}Mg_{15}$

^{26}Mg(n,γ) E=thermal 92Wa06 (continued)

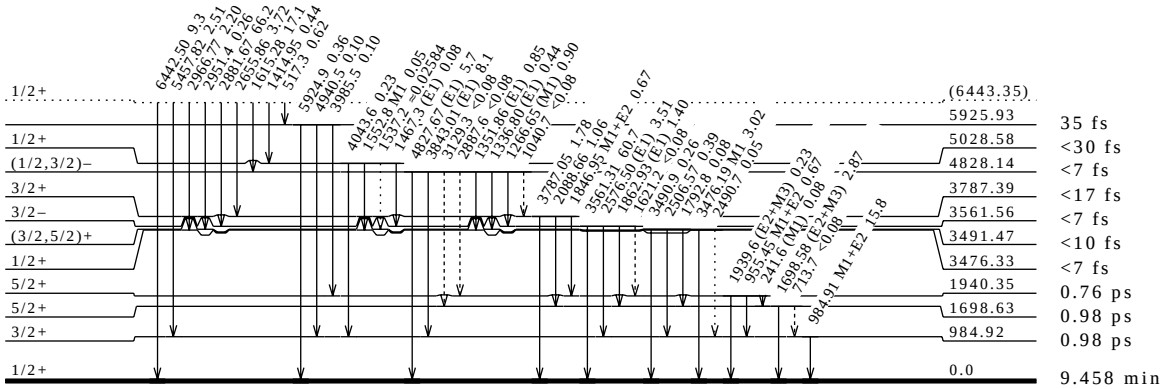
γ(^{27}Mg) (continued)

Eγ	E(level)	Iγ†#	Mult.‡	Comments
3476.19 *9*	3476.33	3.02 *16*	M1	σ(n,γ)=1.17 mb *6*.
3490.9 *6*	3491.47	0.26 *5*		σ(n,γ)=0.10 mb *2*.
3561.31 *4*	3561.56	60.7 *18*		σ(n,γ)=23.5 mb *7*.
3787.05 *15*	3787.39	1.78 *16*		σ(n,γ)=0.69 mb *6*.
3843.01 *8*	4828.14	8.1 *5*	(E1)	σ(n,γ)=3.14 mb *16*.
3985.5 *6*	5925.93	0.10 *3*		σ(n,γ)=0.04 mb *1*.
4043.6 *3*	5028.58	0.23 *6*		σ(n,γ)=0.09 mb *2*.
4827.67 *6*	4828.14	5.7 *4*	(E1)	σ(n.,γ)=2.20 mb *13*.
4940.5§ *3*	5925.93	0.10 *3*		σ(n,γ)=0.04 mb *1*.
5457.82 *15*	(6443.35)	2.51 *18*		σ(n,γ)=0.97 mb *7*.
5924.9 *4*	5925.93	0.36 *6*		σ(n,γ)=0.14 mb *2*.
6442.50 *6*	(6443.35)	9.3 *5*		σ(n,γ)=3.59 mb *17*.

† Absolute intensities per 100 neutron captures. For γ–ray cross section in mb, multiply by 0.3906 per 100 neutron captures.
‡ From adopted gammas.
§ Presence deduced from the known level energies and brnching ratios.
# For intensity per 100 neutron captures, multiply by 1.
@ Placement of transition in the level scheme is uncertain.

Level Scheme

Intensities: I(γ+ce) per 100 parent decays



$^{27}_{12}Mg_{15}$

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14

Other: 90Is05, 82sh027, 81Pr04.

Target Jπ=1/2+.

82Sc14: measured Eγ, Iγ with a Ge(Li) detector, a curved crystal spectrometer GAMS, and a pair spectrometer applying a self– consistent energy calibration. Deduced neutron separation S(n)=7725.18 keV *8*.

Other measured S(n)=7725.20 keV *6* (80Is02).

Evaluated S(n)=7725.05 keV *6* (95Au04).

^{28}Al Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	3+	2.2414 min *12*	%β⁻=100.
30.8268 *7*	2+	2.07 ns *5*	
972.483 *14*	0+	33 ps *2*	
1013.695 *4*	3+	105 fs *20*	
1373.045 *9*	1+	220 fs *35*	
1620.438 *24*	1+	85 fs *40*	
1623.006 *8*	2+	85 fs *40*	
2139.005 *5*	2+	55 fs *14*	
2201.586 *18*	1+	45 fs *25*	
2271.817 *8*	4+	20 fs *10*	
2486.256 *11*	2+	70 fs *15*	
2565.80 *5*	(1,2,3+)		
2582.06 *15*	5+	370 fs *40*	
2656.172 *17*	4+	35 fs *14*	
2987.66 *5*	(1,3)+	60 fs *55*	
3296.486 *8*	3+	100 fs *20*	
3347.280 *7*	2+	100 fs *35*	
3465.342 *5*	4−	62 fs *8*	
3591.529 *4*	3−	70 fs *15*	
3670.883 *20*	3+	130 fs *40*	
3709.282 *9*	(2,3)+	185 fs *20*	
3875.842 *6*	2−	55 fs *15*	
3901.044 *15*	(1,3,5)+	185 fs *30*	
3935.658 *7*	2+	<40 fs	
4244.52 *5*	2+	40 fs *20*	
4461.96 *5*	(2,4)+		
4596.601 *17*	1+	160 fs *85*	
4691.191 *3*	3−	35 fs *9*	
4765.010 *5*	2−	35 fs *9*	
4903.615 *5*	2−	39 fs *6*	
5015.525 *12*	3+		
5134.932 *5*	3−	28 fs *7*	
5177.03 *3*	(1+,2,3+)		
5377.860 *24*	(1+ to 4+)		
5442.414 *6*	2−	28 fs *7*	
5741.243 *9*	(1 to 4+)		
5797.636 *9*	2−		
5860.868 *15*	(2,3)+		
6019.706 *13*	(1+ to 4+)		
6198.932 *7*	(2+ to 4+)		
6316.862 *6*	2+		
6419.94 *4*	(1,2)+		
6441.481 *8*	(3+,4)		
6623.20 *3*	(1+ to 4+)		
6651.282 *22*	(0+ to 3+)		
6756.766 *22*	(2+,3)		
6893.796 *11*	(2+,3)		
7176.542 *21*	(1+ to 3+)		
7269.545 *24*	(2+ to 4+)		
(7725.05 *6*)	2+,3+		E(level): from evaluated s(n) (95Au04). Jπ: from s–wave neutron capture. Observed deexcitation intensity is 101% of g.s. feeding.

† From adopted levels, except as noted.

‡ From 82Sc14 (only the statistical error is given; to obtain the total errors an additional systematic error of 11ppm has to be added), except as noted.

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

γ(^{28}Al)

All data are from 82Sc14, except as noted.
Iγ normalization: renormalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ†§	Mult.‡	δ‡	Comments
30.8282 *7*	30.8268	27.9 *CA*	M1(+E2)	+0.001 *6*	Iγ: not measured. Value from intensity balance.
(310.2)	2582.06	0.003 *1*	(M1)		
400.573 *22*	1373.045	0.63 *7*	M1		
455.70 *5*	(7725.05)	0.29 *7*			
548.69 *4*	(7725.05)	0.23 *3*			
647.94 *5*	1620.438	0.07 *4*	M1		
831.464 *20*	(7725.05)	1.3 *2*			
(863.24)	2486.256	0.10 *3*			
865.84 *5*	2486.256	0.54 *7*			
941.72 *3*	972.483	1.3 *1*	E2		
945.34 *7*	2565.80	0.24 *7*			
968.49 *6*	(7725.05)	0.42 *6*			
982.968 *23*	1013.695	4.4 *5*	M1+E2	+0.13 *5*	
1013.605 *25*	1013.695	2.7 *3*	(M1)		
1073.99 *5*	(7725.05)	0.57 *7*			
1102.08 *4*	(7725.05)	0.7 *2*			
1125.266 *14*	2139.005	0.38 *7*			
1173.440 *9*	4765.010	0.39 *9*			
1193.500 *23*	3465.342	0.6 *1*	(E1)		
(1283.54 *7*)	2656.172	1.1 *1*			
1283.70# *3*	(7725.05)	1.1# *1*			
1305.30 *12*	(7725.05)	0.19 *5*			
1342.280 *18*	1373.045	1.0 *1*	M1+E2	−0.14 *9*	
1364.62 *14*	2987.66	0.38 *6*			
1372.917 *18*	1373.045	0.15 *8*	(E2)		
1408.346 *9*	(7725.05)	3.1 *3*			
(1437.40)	3709.282	0.27 *6*			
(1513.75)	2486.256	0.05 *2*			
1526.258 *12*	(7725.05)	1.8 *2*			
(1570.24)	3709.282	0.19 *6*			
1589.64 *5*	1620.438	1.6 *2*	M1+E2	+0.18 *9*	
1592.235 *18*	1623.006	0.36 *5*			
(1620.26)	1620.438	0.1			
1622.871 *18*	1623.006	4.6 *5*			
1642.41 *3*	2656.172	0.30 *5*	(M1)		
1673.411 *22*	3296.486	0.23 *3*			
1705.52 *4*	(7725.05)	0.39 *5*			
1720.0# *3*	5015.525	0.08# *5*			
	6316.862	0.08# *5*			
	6623.20	0.08# *5*			
1864.33 *3*	(7725.05)	0.46 *7*			
1927.56 *3*	(7725.05)	1.2 *2*			
x1963.68 *20*		0.05 *1*			
1968.452 *19*	3591.529	0.10 *1*	(E1)		
1975.2# *5*	2987.66	0.025# *8*			
	3347.280	0.025# *8*			
	4461.96	0.025# *8*			
	5442.414	0.025# *8*			
1983.990 *13*	(7725.05)	1.1 *1*			
2047.77 *4*	3670.883	0.07 *1*			
2108.192 *11*	2139.005	2.8 *1*			
2128.70 *3*	6893.796	0.34 *2*			
2138.828 *9*	2139.005	2.2 *1*			
2170.74 *3*	2201.586	0.45 *3*			
2247.39 *3*	4903.615	0.040 *6*			
2255.36 *5*	3875.842	0.55 *4*	E1		
2271.667 *16*	2271.817	2.1 *1*			
2276.7# *11*	3901.044	0.04# *3*			
	4765.010	0.04# *3*			
	5741.243	0.04# *3*			
x2279.1 *7*		0.08 *3*			

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$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

γ(^{28}Al) (continued)

Eγ	E(level)	Iγ†§	Mult.‡	Comments
2282.804 *15*	(7725.05)	4.7 *2*		
x2299.94 *10*		0.12 *1*		
2312.56 *5*	3935.658	0.035 *6*		
2347.27 *4*	(7725.05)	0.16 *1*		
x2380.34 *5*		0.21 *1*		
x2384.3 *3*		0.034 *6*		
2419.22 *3*	4691.191	0.14 *1*	(E1)	
2451.554 *18*	3465.342	0.39 *2*	(E1)	
2455.42 *3*	2486.256	0.036 *7*		
2486.058 *19*	2486.256	0.18 *1*	E2	
2502.71 *4*	3875.842	0.16 *1*	E1	
2534.92 *16*	2565.80	0.084 *8*		
2548.09 *5*	(7725.05)	0.15 *1*		
2552.060 *10*	4691.191	0.094 *8*	(E1)	
2563.32 *3*	4765.010	0.10 *1*		
x2567.8 *3*		0.70 *1*		
2577.696 *13*	3591.529	2.2 *1*	(E1)	
2581.90 *19*	2582.06	0.05 *1*	(E2)	
2590.212 *17*	(7725.05)	4.2 *2*		Iγ: 3.9 *2* (90Is05).
2625.866 *23*	4765.010	1.37 *7*	(E1)	
x2656.34 *7*		0.16 *1*		
2690.65 *5*	5177.03	0.029 *6*		
2709.62 *4*	(7725.05)	0.69 *4*		
x2717.4 *4*		0.021 *5*		
2725.206 *13*	6316.862	0.021 *6*		
x2728.27 *5*		0.27 *1*		
x2733.64 *3*		0.38 *2*		
2743.51 *3*	5015.525	0.045 *6*		
2821.454 *7*	(7725.05)	3.9 *2*		
2862.000 *11*	3875.842	0.038 *6*		
2876.44 *11*	5442.414	0.116 *8*		
2880.73 *7*	6756.766	0.027 *5*		
2887.208 *25*	3901.044	0.23 *1*		
x2893.87 *17*		0.049 *6*		
2903.24 *3*	3875.842	0.011 *5*		
2921.795 *17*	3935.658	0.28 *1*		
2954.38 *18*	6419.94	0.23 *3*		
2960.099 *10*	(7725.05)	9.6 *5*		Iγ: 9.2 *4* (90Is05), 9.0 *14* (82Sh27), 9.63 *19* (81Pr04).
2973.42 *7*	4596.601	0.024 *3*		
2987.41 *7*	2987.66	0.32 *4*		
3017.75 *3*	6893.796	0.06 *2*		
3020.235 *15*	6316.862	0.07 *2*		
3024.89 *13*	7269.545	0.05 *2*		
3033.904 *6*	(7725.05)	8.8 *4*		Iγ: 8.7 *4* (90Is05), 7.28 *11* (82Sh27), 8.99 *18* (81Pr04).
x3053.6 *4*		0.021 *5*		
3068.00 *3*	4691.191	0.081 *3*		
x3075.65 *9*		0.083 *6*		
3128.48 *3*	(7725.05)	0.24 *1*		
x3142.22 *6*		0.16 *1*		
x3191.20 *12*		0.048 *3*		
x3208.27 *7*		0.092 *6*		
3222.73 *4*	6893.796	0.049 *3*		
3230.59 *8*	4244.52	0.027 *3*		
3254.736 *23*	5741.243	0.022 *3*		
3263.06 *8*	(7725.05)	0.10 *1*		
3265.544 *17*	3296.486	0.42 *3*		
3303.153 *9*	5442.414	1.14 *6*	(E1)	
3316.341 *12*	3347.280	0.025 *3*		
3346.975 *12*	3347.280	0.50 *3*		
x3375.08 *24*		0.026 *3*		
3391.74 *5*	4765.010	0.57 *3*	(E1)	
3409.26 *5*	6756.766	0.023 *3*		
3448.06 *8*	4461.96	0.032 *5*		

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$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

γ(^{28}Al) (continued)

Eγ	E(level)	Iγ†§	Mult.‡	Comments
3465.063 *7*	3465.342	7.0 *4*	(E1)	Iγ: 7.1 *3* (90Is05), 7.25 *15* (81Pr04).
x3472.3 *3*		0.06 *1*		
3480.54 *12*	(7725.05)	0.12 *1*		
3560.567 *7*	3591.529	0.93 *5*	(E1)	
x3569.9 *3*		0.036 *6*		
3591.201 *6*	3591.529	4.7 *2*	(E1)	Iγ: 4.7 *2* (90Is05), 4.86 *10* (81Pr04).
3598.46 *10*	7269.545	0.15 *1*		
3623.88 *7*	4596.601	0.086 *6*	M1	
3635.24 *8*	6623.20	0.010 *3*		
3639.88 *4*	3670.883	0.073 *5*		
3659.06 *3*	5860.868	0.064 *5*		
x3671.22 *8*		0.070 *5*		
3678.32 *3*	3709.282	0.31 *2*		
x3702.22 *7*		0.078 *5*		
3708.953 *15*	3709.282	0.45 *2*		
3721.60 *3*	5860.868	0.030 *3*		
x3725.1 *3*		0.024 *3*		
3750.83# *18*	4765.010	0.035# *3*		
	6316.862	0.035# *3*		
3754.62 *4*	5377.860	0.043 *3*		
3768.82 *9*	6756.766	0.013 *2*		
3789.322 *11*	(7725.05)	0.87 *4*		
3803.74 *5*	5177.03	0.011 *3*		
3821.67 *8*	5442.414	0.033 *8*		
3823.908 *24*	(7725.05)	0.56 *3*		
3849.114 *7*	(7725.05)	3.1 *2*		
3859.1 *3*	6441.481	0.046 *6*		
x3865.7 *4*		0.027 *6*		
3875.495 *10*	3875.842	2.7 *1*		
x3881.8 *4*		0.027 *6*		
3889.659 *12*	4903.615	0.23 *1*		
3900.701 *24*	3901.044	0.23 *1*		
3904.653 *14*	3935.658	0.20 *1*		
3926.816 *19*	6198.932	0.023 *3*		
3935.287 *11*	3935.658	0.33 *2*		
x3949.8 *4*		0.014 *2*		
4001.49 *8*	5015.525	0.135 *8*		
4015.655 *10*	(7725.05)	0.73 *4*		
x4023.21 *5*		0.138 *8*		
4044.716 *22*	6316.862	0.023 *2*		
4054.09 *4*	(7725.05)	0.143 *8*		
4059.647 *14*	6198.932	0.030 *3*		
4069.007 *19*	5442.414	0.157 *8*		
4085.17 *8*	6651.282	0.008 *2*		
4100.26 *15*	6756.766	0.016 *5*		
4119.9# *4*	5134.932	0.040# *8*		
	5741.243	0.040# *8*		
x4125.09 *22*		0.088 *9*		
4133.406 *6*	(7725.05)	6.9 *3*		Iγ: 7.0 *3* (90Is05), 7.53 *113* (82Sh27), 7.37 *15* (81Pr04).
4162.4# *5*	5134.932	0.019# *5*		
	5177.03	0.019# *5*		
4169.347 *19*	6441.481	0.122 *7*		
x4175.06 *23*		0.030 *3*		
x4185.23 *10*		0.064 *5*		
4213.43 *8*	4244.52	0.056 *3*		
4218.04 *7*	6419.94	0.027 *3*		
4237.43# *10*	5860.868	0.060# *5*		
	6893.796	0.060# *5*		
4259.539 *6*	(7725.05)	6.8 *3*		Iγ: 7.0 *3* (90Is05), 6.16 *95* (82Sh27), 7.37 *15* (81Pr04).
4270.14 *5*	6756.766	0.054 *7*		
4280.58 *15*	6419.94	0.17 *1*		
x4330.75 *12*		0.052 *3*		
4377.624 *12*	(7725.05)	0.43 *2*		

Continued on next page (footnotes at end of table)

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

γ(^{28}Al) (continued)

Eγ	E(level)	Iγ†§	Mult.‡	Comments
x4384.1 *4*		0.010 *2*		
4396.32 *4*	6019.706	0.058 *3*		
4424.221 *20*	5797.636	0.36 *2*		
4428.418 *12*	(7725.05)	0.81 *4*		
x4447.27 *19*		0.019 *2*		
4461.54 *8*	4461.96	0.042 *3*		
4484.52 *5*	6756.766	0.071 *5*		
4511.86 *4*	6651.282	0.084 *5*		
4565.47 *3*	4596.601	0.027 *2*		
4575.555 *17*	6198.932	0.30 *2*		
x4582.21 *11*		0.041 *3*		
4596.11 *3*	4596.601	0.124 *7*		
4612.98 *6*	7269.545	0.016 *2*		
x4617.77 *12*		0.082 *6*		
4621.53 *3*	6893.796	0.19 *1*		
4660.046 *5*	4691.191	2.6 *1*	(E1)	Iγ: 2.6 *1* (90Is05).
4690.678 *5*	4691.191	4.6 *2*	(E1)	Iγ: 4.8 *2* (90Is05), 4.99 *10* (81Pr04).
4733.846 *7*	4765.010	5.5 *3*	(E1)	
4737.17 *18*	(7725.05)	0.45 *2*		
4754.35 *6*	6893.796	0.38 *2*		
4764.479 *8*	4765.010	0.91 *5*		
x4769.61 *15*		0.113 *9*		
4783.485 *18*	5797.636	0.011 *3*		
x4812.54 *17*		0.031 *2*		
x4868.80 *9*		0.058 *3*		
4903.113 *6*	4903.615	3.1 *2*	(E1)	Iγ: 3.3 *2* (90Is05).
x4965.8 *4*		0.009 *1*		
4984.308 *17*	5015.525	0.113 *6*		
x4996.64 *7*		0.064 *3*		
5005.504 *24*	6019.706	0.048 *3*		
5014.940 *21*	5015.525	0.003 *1*		
x5031.51 *17*		0.017 *1*		
5068.60 *3*	(7725.05)	0.173 *9*		
5103.702 *7*	5134.932	0.39 *2*		
5130.06 *11*	7269.545	0.107 *9*		
5134.334 *7*	5134.932	3.0 *1*	(E1)	Iγ: 3.2 *2* (90Is05), 3.26 *6* (81Pr04).
5142.6 *4*	(7725.05)	0.015 *2*		
5176.45 *5*	5177.03	0.070 *3*		
5184.74 *3*	6198.932	0.030 *2*		
x5203.54 *21*		0.017 *1*		
x5209.30 *24*		0.022 *2*		
x5213.4 *5*		0.009 *2*		
x5228.4 *4*		0.008 *1*		
5238.478 *19*	(7725.05)	0.26 *1*		
x5269.91 *6*		0.057 *3*		
5277.68 *5*	6651.282	0.021 *1*		
5302.632 *12*	6316.862	0.47 *2*		
x5315.14 *12*		0.031 *2*		
5343.87 *6*	6316.862	0.017 *1*	E2	
5377.25 *4*	5377.860	0.080 *5*		
5411.077 *7*	5442.414	2.0 *1*	(E1)	
5427.257 *13*	6441.481	0.087 *5*		
5441.70 *7*	5442.414	0.015 *2*	(E1)	
5446.90 *7*	6419.94	0.035 *2*		
5452.84 *4*	(7725.05)	0.168 *9*		
x5459.39 *18*		0.021 *2*		
5523.13 *7*	(7725.05)	0.064 *3*		
x5564.6 *5*		0.007 *1*		
5585.667 *23*	(7725.05)	1.10 *5*		
x5594.7 *4*		0.009 *1*		
5709.852 *13*	5741.243	0.56 *3*		
x5719.14 *16*		0.022 *2*		
x5729.6 *4*		0.008 *1*		

Continued on next page (footnotes at end of table)

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

γ(^{28}Al) (continued)

Eγ	E(level)	Iγ†§	Comments
x5748.2 *14*		0.002 *2*	
x5760.57 *24*		0.023 *2*	
5766.272 *17*	5797.636	0.38 *2*	
5796.904 *17*	5797.636	0.124 *7*	
5802.89 *5*	7176.542	0.035 *2*	
5829.49 *4*	5860.868	0.013 *1*	
5860.12 *3*	5860.868	0.155 *8*	
5879.42 *3*	6893.796	0.026 *2*	
x5882.6 *6*		0.009 *2*	
x5923.42 *7*		0.043 *2*	
x5969.54 *15*		0.023 *2*	
5988.284 *23*	6019.706	0.023 *2*	
6018.92 *3*	6019.706	0.187 *9*	
6101.54 *5*	(7725.05)	2.6 *1*	Iγ: 2.7 *1* (90Is05), 2.71 *6* (81Pr04).
x6109.6 *7*		0.010 *2*	
x6121.3 *5*		0.011 *2*	
6162.13 *4*	7176.542	0.013 *2*	
6198.141 *11*	6198.932	0.67 *3*	Iγ: 0.70 *3* (90Is05).
x6210.8 *3*		0.013 *1*	
6255.10 *5*	7269.545	0.014 *1*	
x6289.6 *8*		0.003 *1*	
6316.031 *12*	6316.862	2.0 *1*	
x6329.5 *8*		0.008 *2*	
6351.45 *4*	(7725.05)	0.109 *6*	
x6390.2 *5*		0.008 *1*	
6419.06 *12*	6419.94	0.006 *1*	
6440.651 *11*	6441.481	0.66 *3*	Iγ: 0.71 *3* (90Is05).
x6449.5 *5*		0.007 *1*	
x6459.69 *22*		0.016 *1*	
6591.61 *4*	6623.20	0.164 *9*	
6619.69 *4*	6651.282	0.24 *2*	
6622.24 *9*	6623.20	0.19 *2*	
x6628.4 *5*		0.011 *2*	
6710.692 *7*	(7725.05)	0.90 *5*	
6725.16 *5*	6756.766	0.086 *5*	
6751.93 *8*	(7725.05)	0.058 *3*	
x6800.7 *3*		0.022 *2*	
x6823.03 *11*		0.055 *3*	
6862.16 *3*	6893.796	0.173 *9*	
x6894.27 *17*		0.031 *2*	
x6936.97 *5*		0.124 *7*	
x7135.24 *12*		0.054 *3*	
7175.50 *4*	7176.542	0.133 *4*	
7237.83 *10*	7269.545	0.087 *5*	
7268.46 *5*	7269.545	0.038 *2*	
x7342.25 *11*		0.060 *3*	
x7377.0 *3*		0.021 *2*	
x7407.73 *11*		0.065 *5*	
7693.407 *4*	(7725.05)	3.3 *2*	Iγ: 3.6 *2* (90Is05), 5.8 (82Sh27).
7724.036 *4*	(7725.05)	26.8 *1*	Iγ: 29.5 *7* (90Is05), 25.1 *67* (82Sh27), 32.1 *6* (81Pr04).

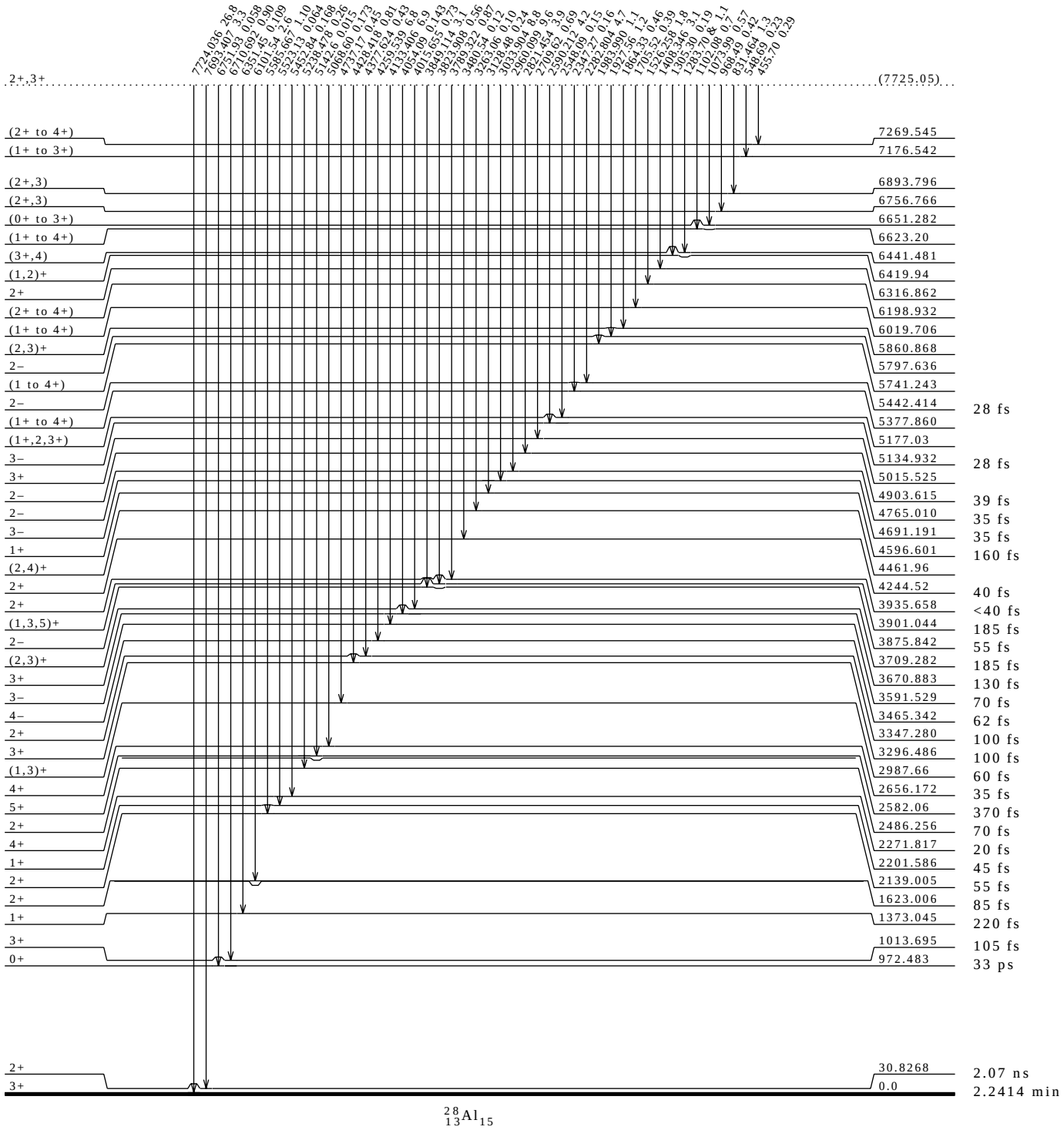
† Absolute intensities per 100 neutron captures.
‡ From adopted gammas.
§ For intensity per 100 neutron captures, multiply by 1.
# Multiply placed; undivided intensity given.
x γ ray not placed in level scheme.

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



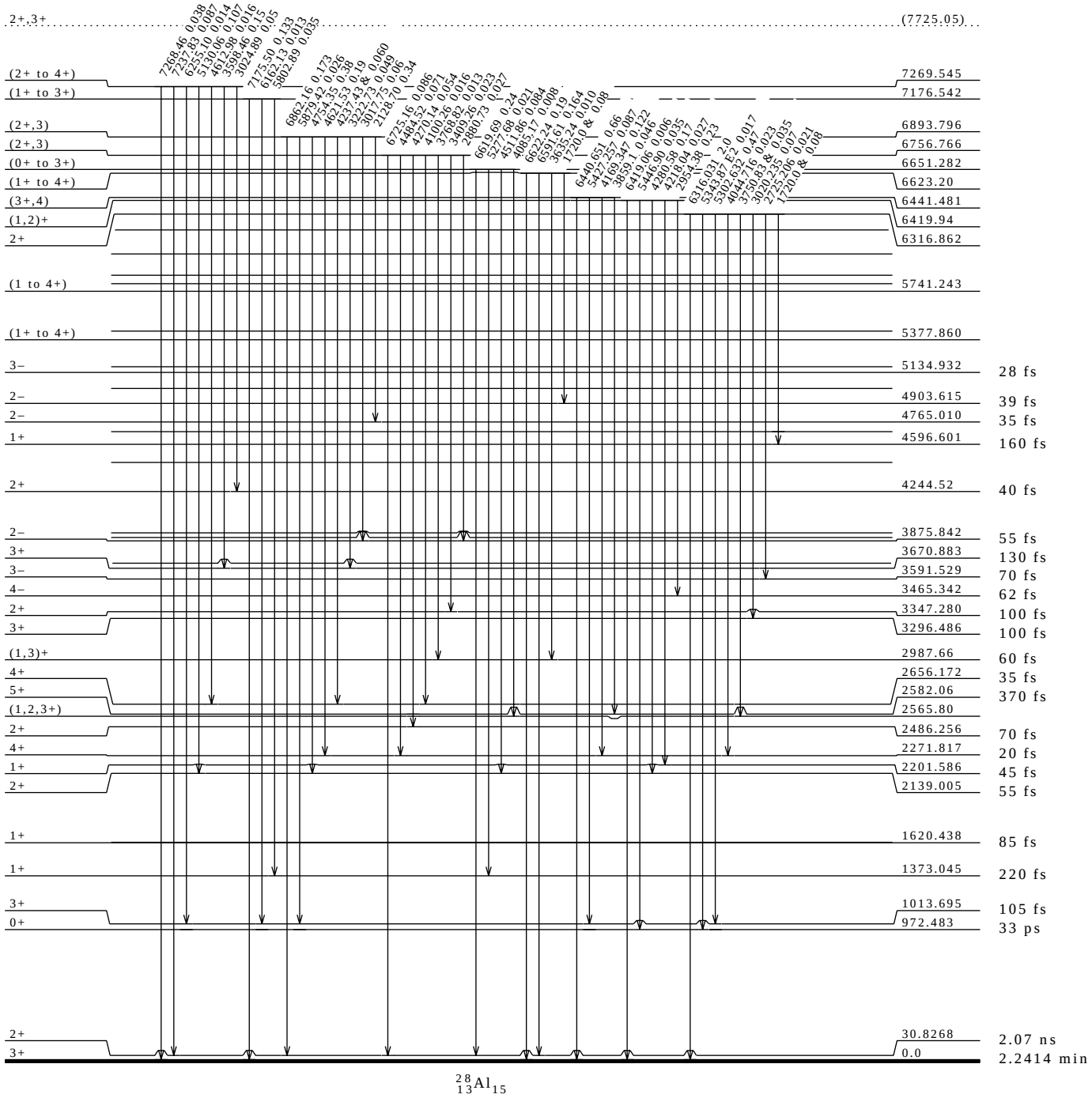
$^{28}_{13}Al_{15}$

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



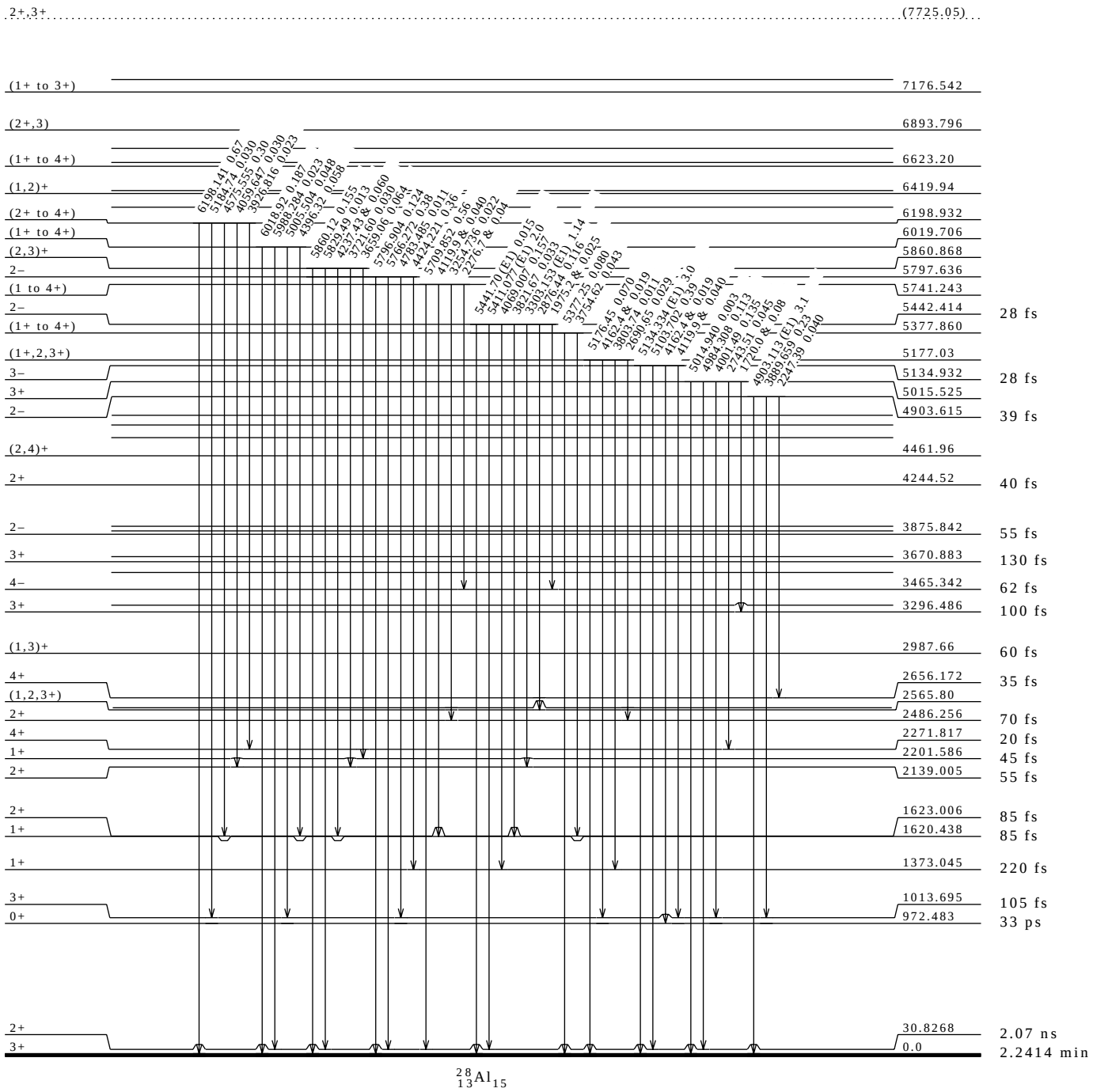
$^{28}_{13}Al_{15}$

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



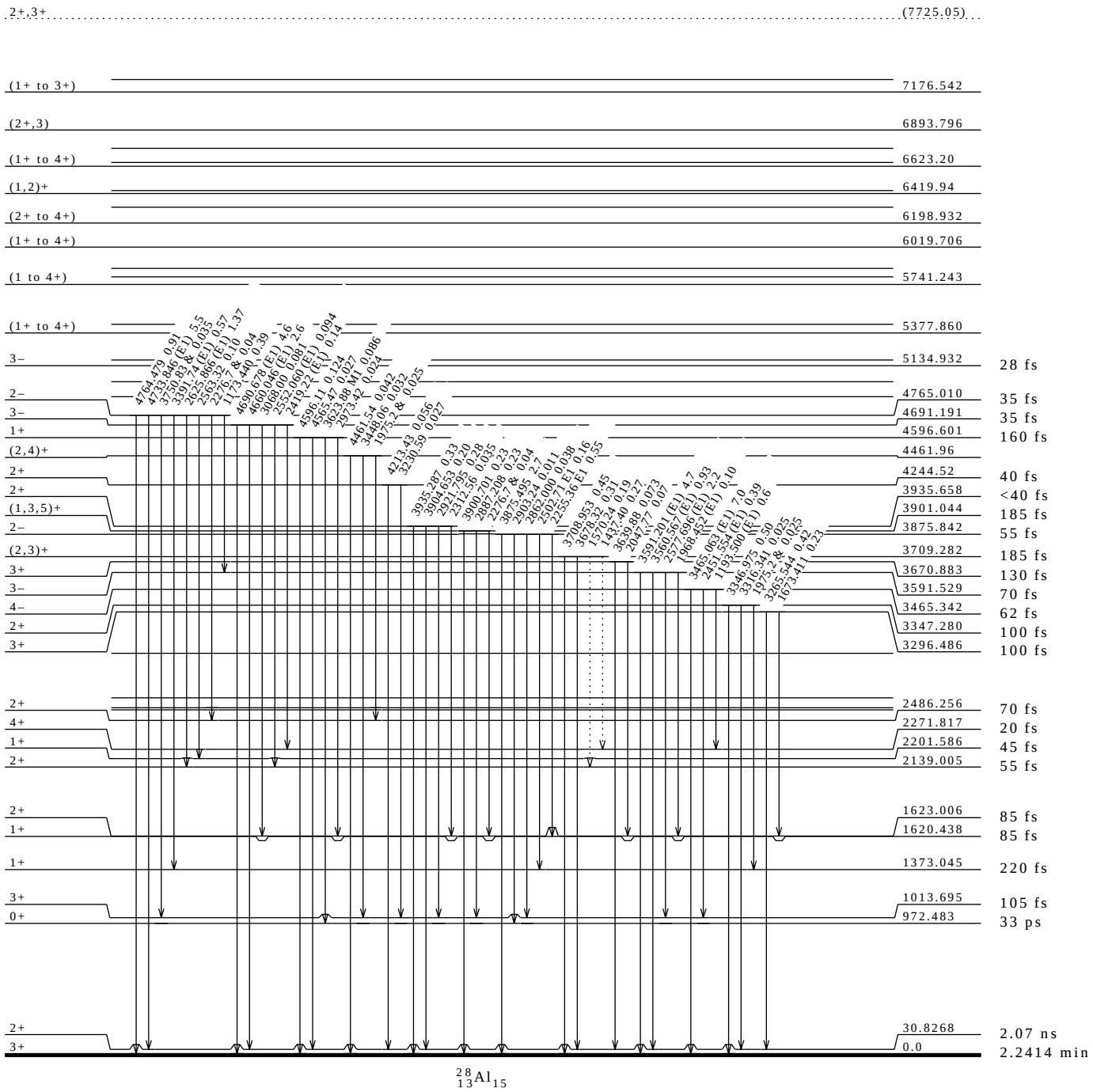
$^{28}_{13}Al_{15}$

$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

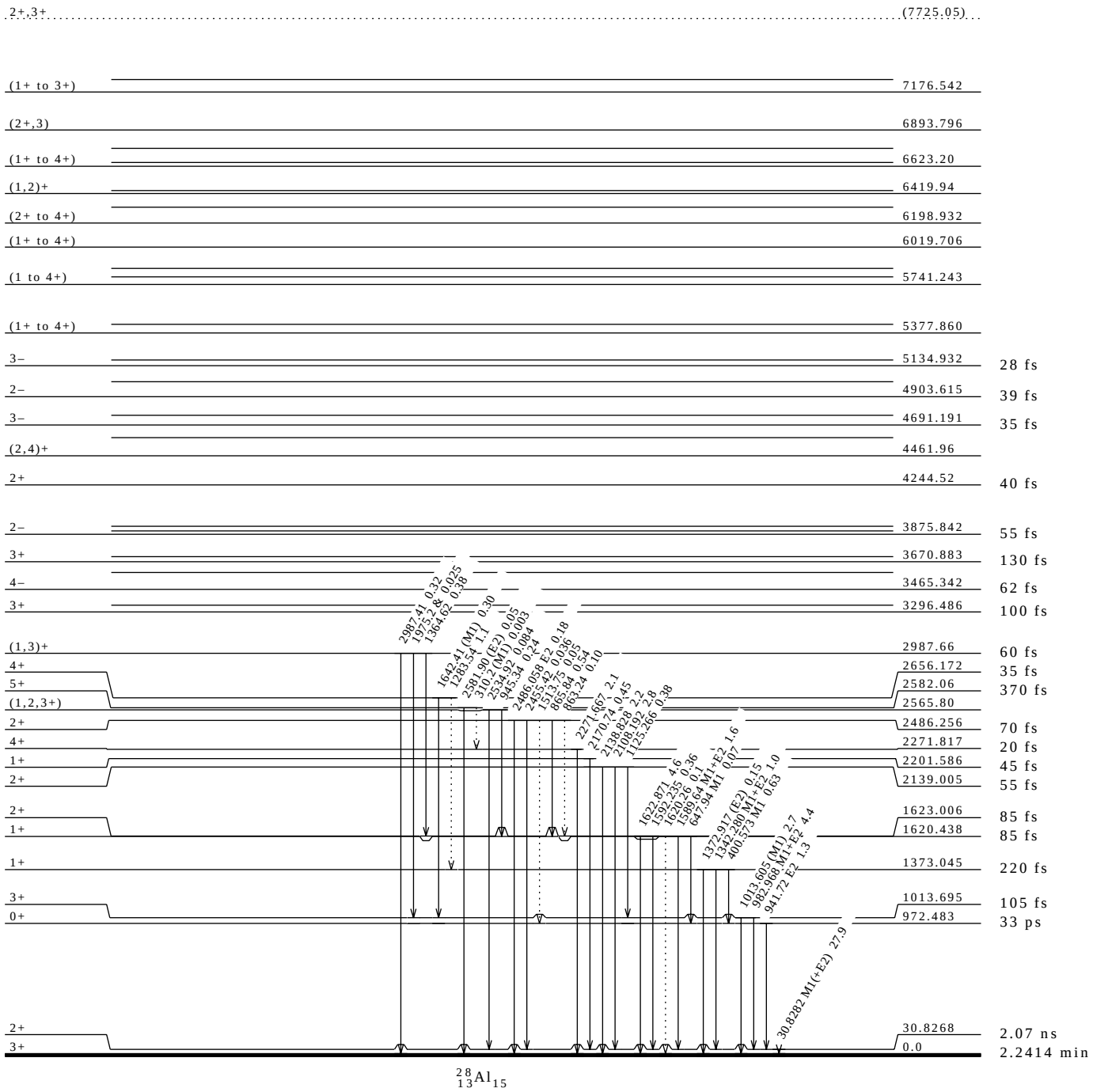


$^{28}_{13}Al_{15}$

^{27}Al(n,γ) E=thermal 82Sc14 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



$^{29}_{14}Si_{15}$

^{28}Si(n,γ) E=thermal 92Ra19,90Is02

Others: 90Is02, 90Is05.
Target Jπ=0+.
92Ra19: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=8473.56 keV *4*.
Other measured S(n)=8473.61 keV *4* (90Is02).
Evaluated S(n)=8473.55 keV *3* (95Au04).
Measured thermal–neutron capture cross section, σ(n,γ)=169 mb *4* (92Ra19), 207 mb *4* (90Is02,90Is05).

^{29}Si Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	1/2+	stable	
1273.375 *22*	3/2+	290 fs *10*	
2028.04 *7*	5/2+	306 fs *10*	
2425.86 *3*	3/2+	18.4 ps *11*	
3066.98 *4*	5/2+	32 fs *2*	
4840.34 *7*	1/2+	<3 fs	
4934.389 *22*	3/2–	0.48 fs *12*	
6380.575 *24*	1/2–	0.36 fs *11*	
6712.9 *5*	3/2		
6908.52 *6*	(1/2+,3/2)		
7058.00 *9*	1/2+	<15 fs	
7523.19 *13*	(1/2,3/2)	<15 fs	
7996.9 *3*	3/2–		
(8473.55 *3*)	1/2+		E(level): from evaluated S(n) (95Au04). Jπ: from s–wave neutron capture. Observed deexcitation intensity is 100% of g.s. feeding.

† From adopted levels, except as noted.
‡ From Eγ's using least–squares fit to data, except as noted.

γ(^{29}Si)

All data are from 92Ra19, except as noted.
Iγ normalization: renormalized from assuming Iγ(to g.s.)=100. σ(n,γ)=0.177 *5*.

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
397.7 *4*	2425.86	0.018 *6*	(M1)		σ(n,γ)=0.03 mb *1* (92Ra19).
476.6 *3*	(8473.55)	0.059 *12*			σ(n,γ)=0.10 mb *2* (92Ra19).
(641.25)	3066.98	0.017 *9*			σ(n,γ)=0.029 mb *15*.
754.2 *4*	2028.04	0.030 *12*	M1+E2	–0.03 *3*	σ(n,γ)=0.05 mb *2* (92Ra19).
950.33 *13*	(8473.55)	0.071 *12*			σ(n,γ)=0.12 mb *2* (92Ra19).
1038.89 *10*	3066.98	0.136 *18*	M1+E2	+0.04 *2*	σ(n,γ)=0.23 mb *3* (92Ra19).
x1071.0 *5*		0.047 *12*			σ(n,γ)=0.08 mb *2* (92Ra19).
1152.46 *6*	2425.86	0.528 *24*	M1+E2	+0.009 *8*	σ(n,γ)=0.89 mb *4* (92Ra19).
1273.33 *3*	1273.375	16.9 *9*	M1+E2	+0.197 *9*	σ(n,γ)=28.5 mb *14* (92Ra19).
1415.54 *9*	(8473.55)	0.213 *24*			σ(n,γ)=0.36 mb *4* (92Ra19).
1446.14 *4*	6380.575	0.79 *3*	(M1)		σ(n,γ)=1.34 mb *5* (92Ra19).
1540.18 *6*	6380.575	0.35 *3*	(E1)		σ(n,γ)=0.59 mb *5* (92Ra19).
1564.99 *5*	(8473.55)	0.52 *4*			Iγ: 0.52 *13* (90Is02). σ(n,γ)=0.87 mb *6* (92Ra19).
1760.4 *5*	(8473.55)	0.042 *12*			σ(n,γ)=0.07 mb *2* (92Ra19).
1793.51 *4*	3066.98	0.66 *4*	M1+E2	+0.26 *2*	Iγ: 0.55 *8* (90Is02). σ(n,γ)=1.12 mb *6* (92Ra19).
1867.29 *5*	4934.389	0.77 *4*	(E1)		Iγ: 0.84 *8* (90Is02). σ(n,γ)=1.30 mb *6* (92Ra19).
2027.98 *9*	2028.04	0.44 *5*	E2(+M3)	≈0.0	Iγ: 0.80 *5* (90Is02). σ(n,γ)=0.74 mb *7* (92Ra19).
2092.89 *3*	(8473.55)	19.6 *8*	E1§		Iγ: 19.67 *20* (90Is02). σ(n,γ)=33.0 mb *12* (92Ra19).
2123.8 *6*	7058.00	0.024 *6*	(E1)		σ(n,γ)=0.04 mb *1* (92Ra19).
2425.73 *4*	2425.86	3.00 *12*	M1+E2	–0.32 *7*	Iγ: 3.02 *5* (90Is02). σ(n,γ)=5.06 mb *20* (92Ra19).
2508.24 *13*	4934.389	0.25 *3*			Iγ: 0.21 *2* (90Is02). σ(n,γ)=0.42 mb *5* (92Ra19).

Continued on next page (footnotes at end of table)

$^{29}_{14}Si_{15}$

^{28}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

γ(^{29}Si) (continued)

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
2906.2 *5*	4934.389	0.042 *12*			σ(n,γ)=0.07 mb *2* (92Ra19).
3538.98 *4*	(8473.55)	70.3 *22*	E1§		Iγ: 69.74 *70* (90Is02). σ(n,γ)=118.5 mb *36* (92Ra19).
3566.5 *5*	4840.34	0.036 *12*			σ(n,γ)=0.06 mb *2* (92Ra19).
3633.0@	(8473.55)	<0.071			σ(n,γ)<0.12 mb (92Ra19).
3660.80 *6*	4934.389	4.09 *18*	(E1)		Iγ: 4.05 *4* (90Is02). σ(n,γ)=6.9 mb *3* (92Ra19).
3841.4 *6*	6908.52	0.042 *12*			σ(n,γ)=0.07 mb *2* (92Ra19).
3954.44 *5*	6380.575	2.61 *18*	(E1)		Iγ: 2.40 *3* (90Is02). σ(n,γ)=4.4 mb *3* (92Ra19).
4482.1 *4*	6908.52	0.11 *3*			Iγ: 0.11 *1* (90Is02). σ(n,γ)=0.18 mb *5* (92Ra19).
4632.3 *7*	7058.00	0.024 *12*			σ(n,γ)=0.04 mb *2* (92Ra19).
4839.6 *4*	4840.34	0.24 *3*	M1		Iγ: 0.24 *2* (90Is02). σ(n,γ)=0.40 mb *5* (92Ra19).
4880.2 *5*	6908.52	0.18 *3*			Iγ: 0.15 *2* (90Is02). σ(n,γ)=0.30 mb *5* (92Ra19).
4933.98 *3*	4934.389	65.7 *21*	E1(+M2)	−0.05 *10*	Iγ: 62.49 *65* (90Is02). σ(n,γ)=110.8 mb *34* (92Ra19).
5096.4 *7*	7523.19	0.042 *12*			σ(n,γ)=0.07 mb *2* (92Ra19).
5106.74 *6*	6380.575	3.68 *18*	(E1)		Iγ: 3.55 *4* (90Is02). σ(n,γ)=6.2 mb *3* (92Ra19).
5405.4 *9*	(8473.55)	0.036 *12*	E2§		Iγ: 0.020 *3* (90Is02). σ(n,γ)=0.06 mb *2* (92Ra19).
5634.4 *4*	6908.52	0.125 *18*			Iγ: 0.11 *1* (90Is02). σ(n,γ)=0.21 mb *3* (92Ra19).
5784.7 *7*	7058.00	0.018 *6*			σ(n,γ)=0.03 mb *1* (92Ra19).
6046.91 *16*	(8473.55)	0.33 *4*			Iγ: 0.30 *1* (90Is02). σ(n,γ)=0.55 mb *6* (92Ra19).
6379.80 *4*	6380.575	11.3 *6*	E1		Iγ: 11.04 *13* (90Is02). σ(n,γ)=19.0 mb *10* (92Ra19).
6444.9 *5*	(8473.55)	0.119 *24*	E2§		Iγ: 0.13 *1* (90Is02). σ(n,γ)=0.20 mb *4* (92Ra19).
6711.4 *9*	6712.9	0.030 *12*			Iγ: 0.040 *5* (90Is02). σ(n,γ)=0.05 mb *2* (92Ra19).
6907.6 *7*	6908.52	0.059 *18*			σ(n,γ)=0.10 mb *3* (92Ra19).
7056.9 *4*	7058.00	0.16 *3*	M1		Iγ: 0.15 *1* (90Is02). σ(n,γ)=0.27 mb *5* (92Ra19).
7199.20 *5*	(8473.55)	7.1 *3*			Iγ: 6.81 *7* (90Is02). σ(n,γ)=11.9 mb *5* (92Ra19).
7521.8 *9*	7523.19	0.012 *6*			Iγ: 0.020 *3* (90Is02). σ(n,γ)=0.02 mb *1* (92Ra19).
7994.9 *9*	7996.9	0.018 *6*			Iγ: 0.020 *4* (90Is02). σ(n,γ)=0.03 mb *1* (92Ra19).
8472.2223 *5*	(8473.55)	2.17 *12*			Eγ: from 97Ro26. Iγ: 2.12 *2* (90Is02). σ(n,γ)=3.66 mb *20* (92Ra19).

† Absolute intensities per 100 neutron captures. For γ–ray cross section in mb (92Ra19), multiply by 1.6892 per 100 neutron captures.

‡ From adopted gammas, except as noted.

§ From 92Ra19.

For intensity per 100 neutron captures, multiply by 1.

@ Placement of transition in the level scheme is uncertain.

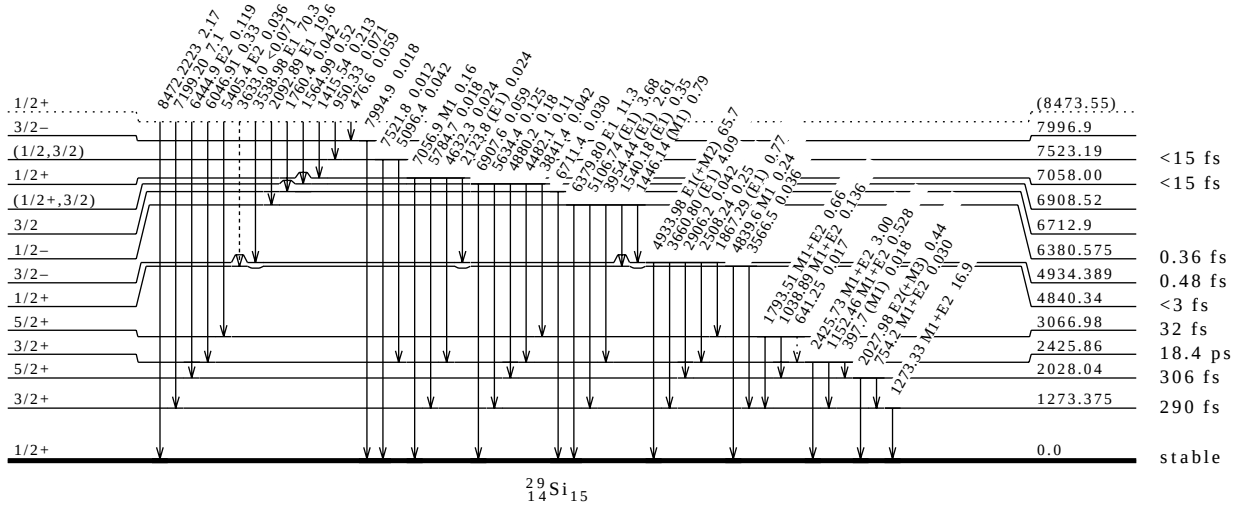
x γ ray not placed in level scheme.

$^{29}_{14}Si_{15}$

^{28}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays



$^{29}_{14}Si_{15}$

^{29}Si(n,γ) E=thermal 92Ra19,90Is02

Others: 90Is02, 90Is05.

Target Jπ=1/2+.

92Ra19: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=10609.24 keV *5*.

Other measured S(n)=10609.21 keV *4* (90Is02).

Evaluated S(n)=10609.18 keV *3* (95Au04).

Measured thermal–neutron capture cross section, σ(n,γ)=119 mb *3* (92Ra19), 120 mb *3* (90Is02,90Is05).

^{30}Si Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	0+	stable	
2235.308 *23*	2+	248 fs *12*	
3498.51 *4*	2+	58 fs *5*	
3769.47 *4*	1+	36 fs *9*	
3787.70 *5*	0+	8.3 ps *5*	
4810.34 *11*	2+	107 fs *14*	
4830.84 *4*	3+	94 fs *17*	
5231.55 *7*	3+	55 fs *14*	
5280.0			
5372.2§ *6*	0+	60 fs *20*	
5487.55 *6*	3−	49 fs *14*	
5614.01 *12*	2+	<14 fs	
6641.19 *6*	2−	23 fs *8*	
6744.06 *3*	1−	0.6 fs *2*	
6914.78 *19*	2+	<24 fs	
7507.86 *4*	2−	<25 fs	
7667.2 *4*	(1,2)+	<14 fs	
8104.8 *3*	2+	<25 fs	
8154.8 *3*	(1− to 4+)		
8163.18 *4*	1−		
8898.07 *10*	1−		
8936.5# *3*	2+		

Continued on next page (footnotes at end of table)

^{29}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

^{30}Si Levels (continued)

E(level)‡	Jπ†	$T_{1/2}$†	Comments
8953.29 *12*	(1,2+)		
9103.72 *4*	(0 to 2)−	<25 fs	
9308.07 *6*	(0 to 3+)	<25 fs	
9597.17 *9*			
9619.76 *6*	1−	0.13 fs *5*	
9792.34 *6*	1−	0.07 fs *2*	
10202.08 *8*	1−	0.05 fs *3*	
10275.8 *3*	(0+ to 4+)		
(10609.18 *3*)	0+,1+		E(level): from evaluated S(n) (95Au04). Jπ: from s−wave neutron capture. Observed deexcitation intensity is 77% of g.s. feeding.

† From adopted levels, except as noted.
‡ From Eγ's using least−squares fit to data, except as noted.
§ γ−rays feeding this level were sought but not observed.
# γ−ray deexciting this level were sought but not observed.

γ(^{30}Si)

All data are from 92Ra19, except as noted.
Iγ normalization: renormalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
271.0@	3769.47	<0.04			σ(n,γ)<0.05 mb (92Ra19).
289.2@	3787.70	<0.04			σ(n,γ)<0.05 mb (92Ra19).
x295.7 *4*		0.034 *9*			σ(n,γ)=0.04 mb *1* (92Ra19).
x326.0 *4*		0.084 *17*			σ(n,γ)=0.10 mb *2* (92Ra19).
333.3 *3*	(10609.18)	0.11 *3*			σ(n,γ)=0.13 mb *3* (92Ra19).
x355.80 *8*		0.29 *3*			σ(n,γ)=0.34 mb *3* (92Ra19).
400.9 *4*	5231.55	0.050 *17*	(M1)		σ(n,γ)=0.06 mb *2* (92Ra19).
407.14 *7*	(10609.18)	0.31 *3*			σ(n,γ)=0.37 mb *3* (92Ra19).
421.0 *5*	5231.55	0.059 *17*			σ(n,γ)=0.07 mb *2* (92Ra19).
x646.8 *3*		0.101 *17*			σ(n,γ)=0.12 mb *2* (92Ra19).
x692.5 *5*		0.084 *17*			σ(n,γ)=0.10 mb *2* (92Ra19).
(782.0)	5614.01	0.029 *10*	M1+E2	+0.20 *11*	σ(n,γ)=0.035 mb *12*.
(803.6)	5614.01	0.010 *5*			σ(n,γ)=0.012 mb *6*.
816.87 *5*	(10609.18)	1.09 *5*			σ(n,γ)=1.30 mb *6* (92Ra19).
989.45 *5*	(10609.18)	1.06 *5*			σ(n,γ)=1.26 mb *6* (92Ra19).
998.9 *3*	9103.72	0.25 *3*			σ(n,γ)=0.30 mb *3* (92Ra19).
1012.05 *9*	(10609.18)	0.82 *5*			σ(n,γ)=0.98 mb *5* (92Ra19).
1022.6@	4810.34	<0.03			σ(n,γ)<0.04 mb (92Ra19).
1027.1@	6641.19	<0.03			σ(n,γ)<0.04 mb (92Ra19).
1040.9@	4810.34	<0.03			σ(n,γ)<0.04 mb (92Ra19).
1061.3@	4830.84	<0.03			σ(n,γ)<0.04 mb (92Ra19).
1153.61 *13*	6641.19	0.45 *4*	(M1)		σ(n,γ)=0.54 mb *4* (92Ra19).
(1248.0)	8163.18	0.13 *6*			σ(n,γ)=0.15 mb *7*.
1263.18 *6*	3498.51	5.51 *17*	M1+E2	+0.18 *4*	σ(n,γ)=6.56 mb *20* (92Ra19).
1301.12 *5*	(10609.18)	1.52 *5*			σ(n,γ)=1.81 mb *6* (92Ra19).
1311.80 *14*	4810.34	0.40 *4*	M1+E2	−0.17 *5*	σ(n,γ)=0.48 mb *4* (92Ra19).
1332.48 *16*	4830.84	0.29 *4*	M1+E2	+0.7 *5*	σ(n,γ)=0.34 mb *4* (92Ra19).
1390.3 *5*	8898.07	0.059 *17*			σ(n,γ)=0.07 mb *2* (92Ra19).
1409.6@	6641.19	<0.03			σ(n,γ)<0.04 mb (92Ra19).
1462.0	5231.55	<0.03			σ(n,γ)<0.04 mb (92Ra19).
x1469.2 *4*		0.14 *3*			σ(n,γ)=0.17 mb *3* (92Ra19).
1505.46 *4*	(10609.18)	3.79 *12*			σ(n,γ)=4.51 mb *14* (92Ra19).
1534.12 *4*	3769.47	5.52 *17*	M1+E2	−0.09 *3*	σ(n,γ)=6.57 mb *20* (92Ra19).
1552.36 *4*	3787.70	3.61 *11*	E2		σ(n,γ)=4.30 mb *13* (92Ra19).
1602.8 *9*	5372.2	0.08 *3*	M1		σ(n,γ)=0.10 mb *3* (92Ra19).
1655.89 *12*	(10609.18)	0.70 *5*			σ(n,γ)=0.83 mb *5* (92Ra19).
1672.7 *3*	(10609.18)	0.27 *3*			σ(n,γ)=0.32 mb *3* (92Ra19).
1711.3 *3*	(10609.18)	4.2 *9*			σ(n,γ)=5.0 mb *10* (92Ra19).
1733.00 *10*	5231.55	1.11 *5*	M1+E2	+0.12 *6*	σ(n,γ)=1.32 mb *6* (92Ra19).

Continued on next page (footnotes at end of table)

^{29}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

γ(^{30}Si) (continued)

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
1810.42 *22*	6641.19	0.45 *4*	(E1)		σ(n,γ)=0.54 mb *4* (92Ra19).
1830.6 *4*	6641.19	0.23 *4*	(E1)		σ(n,γ)=0.27 mb *4* (92Ra19).
1844.40 *16*	5614.01	0.52 *5*	M1+E2	+0.11 *5*	σ(n,γ)=0.62 mb *5* (92Ra19).
1893.6 *5*	7507.86	0.16 *4*			σ(n,γ)=0.19 mb *4* (92Ra19).
1933.9 *5*	6744.06	0.18 *4*			σ(n,γ)=0.22 mb *4* (92Ra19).
1989.02 *7*	5487.55	1.06 *5*	E1(+M2)	−0.02 *7*	σ(n,γ)=1.26 mb *6* (92Ra19).
2020.33 *23*	7507.86	1.27 *5*			σ(n,γ)=1.51 mb *6* (92Ra19).
2154.3 *6*	8898.07	0.12 *3*			σ(n,γ)=0.14 mb *3* (92Ra19).
2235.23 *3*	2235.308	45.6 *14*	E2		Iγ: 62.4 *15* (90Is02). σ(n,γ)=54.3 mb *16* (92Ra19).
2256.7 *4*	8898.07	0.21 *4*			σ(n,γ)=0.25 mb *4* (92Ra19).
2276.22 *8*	7507.86	1.24 *6*			σ(n,γ)=1.48 mb *7* (92Ra19).
2359.57 *4*	9103.72	3.52 *11*			Iγ: 6.3 *12* (90Is02). σ(n,γ)=4.19 mb *13* (92Ra19).
2445.94 *3*	(10609.18)	7.9 *3*	E1§		Iγ: 10.5 *8* (90Is02). σ(n,γ)=9.4 mb *3* (92Ra19).
2454.5 *3*	(10609.18)	0.25 *3*			σ(n,γ)=0.30 mb *3* (92Ra19).
2504.3@	(10609.18)	<0.03			σ(n,γ)<0.04 mb (92Ra19).
2574.8 *5*	4810.34	0.13 *4*	M1+E2	−0.52 *11*	σ(n,γ)=0.15 mb *4* (92Ra19).
2595.39 *4*	4830.84	2.81 *9*	M1+E2	+0.73 *9*	Iγ: 1.9 *6* (90Is02). σ(n,γ)=3.35 mb *10* (92Ra19).
(2667)	8154.8	0.050 *17*			σ(n,γ)=0.06 mb *2*.
2667.0 *6*	9308.07	0.13 *4*			σ(n,γ)=0.16 mb *4* (92Ra19).
2676.87 *6*	7507.86	2.18 *10*	(E1)		Iγ: 2.6 *7* (90Is02). σ(n,γ)=2.59 mb *11* (92Ra19).
x2747.6 *5*		0.11 *3*			σ(n,γ)=0.13 mb *3* (92Ra19).
2871.6 *3*	6641.19	0.34 *5*	(E1)		σ(n,γ)=0.40 mb *5* (92Ra19).
2941.9 *5*	(10609.18)	0.18 *3*			σ(n,γ)=0.22 mb *3* (92Ra19).
2956.25 *12*	6744.06	1.09 *6*			σ(n,γ)=1.30 mb *7* (92Ra19).
2996.2 *9*	5231.55	0.12 *3*			σ(n,γ)=0.14 mb *3* (92Ra19).
3101.19 *3*	(10609.18)	23.7 *8*	E1§		Iγ: 29.2 *7* (90Is02). σ(n,γ)=28.2 mb *9* (92Ra19).
3136.6 *7*	5372.2	0.13 *4*	E2		σ(n,γ)=0.15 mb *4* (92Ra19).
3142.5@	6641.19	<0.06			σ(n,γ)<0.07 mb (92Ra19).
3145.1@	6914.78	<0.05			σ(n,γ)<0.06 mb (92Ra19).
3252.00 *9*	5487.55	1.10 *5*	E1(+M2)	−0.04 *5*	Iγ: 1.3 *5* (90Is02). σ(n,γ)=1.31 mb *6* (92Ra19).
3283.8 *3*	8898.07	0.36 *5*			σ(n,γ)=0.43 mb *5* (92Ra19).
3294.9 *9*	8104.8	0.050 *17*			σ(n,γ)=0.06 mb *2* (92Ra19).
3378.68 *25*	5614.01	0.38 *5*	M1+E2	−0.29 *4*	σ(n,γ)=0.45 mb *5* (92Ra19).
3415.7 *7*	6914.78	0.13 *4*			σ(n,γ)=0.16 mb *4* (92Ra19).
3498.33 *5*	3498.51	5.42 *17*	E2		Iγ: 7.6 *5* (90Is02). σ(n,γ)=6.45 mb *20* (92Ra19).
3693.8@	9308.07	<0.08			σ(n,γ)<0.10 mb (92Ra19).
3694.2 *3*	(10609.18)	1.10 *6*			σ(n,γ)=1.31 mb *7* (92Ra19).
3738.20 *18*	7507.86	1.71 *9*	(E1)		Iγ: 2.1 *2* (90Is02). σ(n,γ)=2.04 mb *10* (92Ra19).
3769.22 *5*	3769.47	4.70 *15*	M1		Iγ: 5.9 *3* (90Is02). σ(n,γ)=5.59 mb *17* (92Ra19).
(3787.6)	3787.70	0.0101 *17*	E0		
3864.89 *3*	(10609.18)	29.8 *10*	E1§		Iγ: 35.6 *5* (90Is02). σ(n,γ)=35.5 mb *11* (92Ra19).
3967.78 *9*	(10609.18)	3.95 *13*			Iγ: 5.2 *3* (90Is02). σ(n,γ)=4.70 mb *15* (92Ra19).
4009.09 *21*	7507.86	0.93 *5*	(E1)		Iγ: 0.8 *3* (90Is02). σ(n,γ)=1.11 mb *5* (92Ra19).
4087.6 *5*	8898.07	0.34 *4*			σ(n,γ)=0.40 mb *4* (92Ra19).
4168.4@	7667.2	<0.05			σ(n,γ)<0.06 mb (92Ra19).
4375.18 *15*	8163.18	1.22 *5*			σ(n,γ)=1.45 mb *6* (92Ra19).
4393.43 *23*	8163.18	0.71 *5*			σ(n,γ)=0.84 mb *5* (92Ra19).
4405.56 *8*	6641.19	2.91 *10*			Iγ: 4.4 *3* (90Is02). σ(n,γ)=3.46 mb *11* (92Ra19).

Continued on next page (footnotes at end of table)

$^{30}_{14}Si_{16}$

^{29}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

γ(^{30}Si) (continued)

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
4508.64 *17*	6744.06	0.66 *5*	(E1)		Iγ: 1.7 *3* (90Is02). σ(n,γ)=0.79 mb *5* (92Ra19).
(4656)	8154.8	0.059 *17*			σ(n,γ)=0.07 mb *2*.
4664.36 *12*	8163.18	1.13 *5*			Iγ: 0.8 *2* (90Is02). σ(n,γ)=1.35 mb *5* (92Ra19).
4679.2 *3*	6914.78	0.43 *4*	M1+E2	−0.63 *14*	σ(n,γ)=0.51 mb *4* (92Ra19).
4766.7 *7*	9597.17	0.10 *3*			σ(n,γ)=0.12 mb *3* (92Ra19).
4786.5 *8*	9597.17	0.08 *3*			σ(n,γ)=0.10 mb *3* (92Ra19).
4810.0 *3*	4810.34	0.45 *4*	E2		Iγ: 1.2 *4* (90Is02). σ(n,γ)=0.54 mb *4* (92Ra19).
4994.9 *7*	(10609.18)	0.27 *5*			σ(n,γ)=0.32 mb *5* (92Ra19).
5128.18 *17*	8898.07	1.64 *7*			Iγ: 1.9 *1* (90Is02). σ(n,γ)=1.95 mb *8* (92Ra19).
5272.09 *7*	7507.86	15.8 *5*	(E1)		Iγ: 19.8 *3* (90Is02). σ(n,γ)=18.8 mb *6* (92Ra19).
5398.8 *4*	8898.07	0.40 *5*			σ(n,γ)=0.48 mb *6* (92Ra19).
5431.5 *6*	7667.2	0.17 *4*			σ(n,γ)=0.20 mb *4* (92Ra19).
5538.05 *24*	9308.07	0.80 *5*			Iγ: 1.1 *1* (90Is02). σ(n,γ)=0.95 mb *6* (92Ra19).
5868.8 *7*	8104.8	0.18 *4*			σ(n,γ)=0.21 mb *4* (92Ra19).
5920.2 *7*	8154.8	0.13 *4*			σ(n,γ)=0.16 mb *4* (92Ra19).
5927.24 *15*	8163.18	1.34 *7*			Iγ: 1.4 *1* (90Is02). σ(n,γ)=1.60 mb *8* (92Ra19).
6004.4 *9*	9792.34	0.07 *3*			σ(n,γ)=0.08 mb *3* (92Ra19).
6098.0 *3*	9597.17	0.53 *5*			σ(n,γ)=0.63 mb *6* (92Ra19).
(6431.7)	10202.08	0.14 *4*	(E1)		σ(n,γ)=0.17 mb *4*.
6487.0 *7*	10275.8	0.10 *3*			σ(n,γ)=0.12 mb *3* (92Ra19).
6640.7 *9*	6641.19	0.14 *5*	M2§		σ(n,γ)=0.17 mb *5* (92Ra19).
6662.00 *25*	8898.07	1.04 *5*			Iγ: 1.2 *1* (90Is02). σ(n,γ)=1.24 mb *6* (92Ra19).
6717.3 *8*	8953.29	0.24 *5*			σ(n,γ)=0.29 mb *5* (92Ra19).
6743.22 *4*	6744.06	30.7 *10*	E1		Iγ: 37.0 *4* (90Is02). σ(n,γ)=36.6 mb *11* (92Ra19).
6820.7 *4*	(10609.18)	1.08 *8*			Iγ: 0.9 *1* (90Is02). σ(n,γ)=1.28 mb *9* (92Ra19).
6838.83 *15*	(10609.18)	3.68 *14*			Iγ: 4.2 *2* (90Is02). σ(n,γ)=4.38 mb *16* (92Ra19).
6913.7 *5*	6914.78	0.34 *5*	E2		σ(n,γ)=0.40 mb *6* (92Ra19).
7071.8 *7*	9308.07	0.15 *4*			σ(n,γ)=0.18 mb *4* (92Ra19).
7109.82 *7*	(10609.18)	5.02 *16*			Iγ: 5.7 *2* (90Is02). σ(n,γ)=5.98 mb *18* (92Ra19).
7507.4 *8*	7507.86	0.14 *4*			σ(n,γ)=0.17 mb *4* (92Ra19).
(7666)	7667.2	0.020 *7*			σ(n,γ)=0.024 mb *8*.
x7944.5 *9*		0.059 *17*			σ(n,γ)=0.07 mb *2* (92Ra19).
7965.8 *9*	10202.08	0.059 *17*			σ(n,γ)=0.07 mb *2* (92Ra19).
8162.01 *11*	8163.18	2.93 *10*			Iγ: 3.4 *2* (90Is02). σ(n,γ)=3.49 mb *12* (92Ra19).
8372.7 *3*	(10609.18)	0.66 *5*			Iγ: 0.9 *1* (90Is02). σ(n,γ)=0.79 mb *6* (92Ra19).
8896.7 *3*	8898.07	0.50 *5*			Iγ: 0.7 *1* (90Is02). σ(n,γ)=0.60 mb *6* (92Ra19).
8951.9 *5*	8953.29	0.27 *4*			Iγ: 0.4 *1* (90Is02). σ(n,γ)=0.32 mb *4* (92Ra19).
9618.20 *25*	9619.76	1.02 *5*	E1		Iγ: 1.2 *1* (90Is02). σ(n,γ)=1.22 mb *6* (92Ra19).
9790.5 *3*	9792.34	0.93 *5*	E1		Iγ: 1.2 *1* (90Is02). σ(n,γ)=1.11 mb *6* (92Ra19).
10200.6 *6*	10202.08	0.24 *3*	E1		Iγ: 0.3 *1* (90Is02). σ(n,γ)=0.28 mb *3* (92Ra19).
10607.1644 *5*	(10609.18)	6.73 *21*	M1§		Eγ: from 97Ro26. Iγ: 7.7 *2* (90Is02). σ(n,γ)=8.01 mb *25* (92Ra19).

Footnotes continued on next page

$^{30}_{14}Si_{16}$

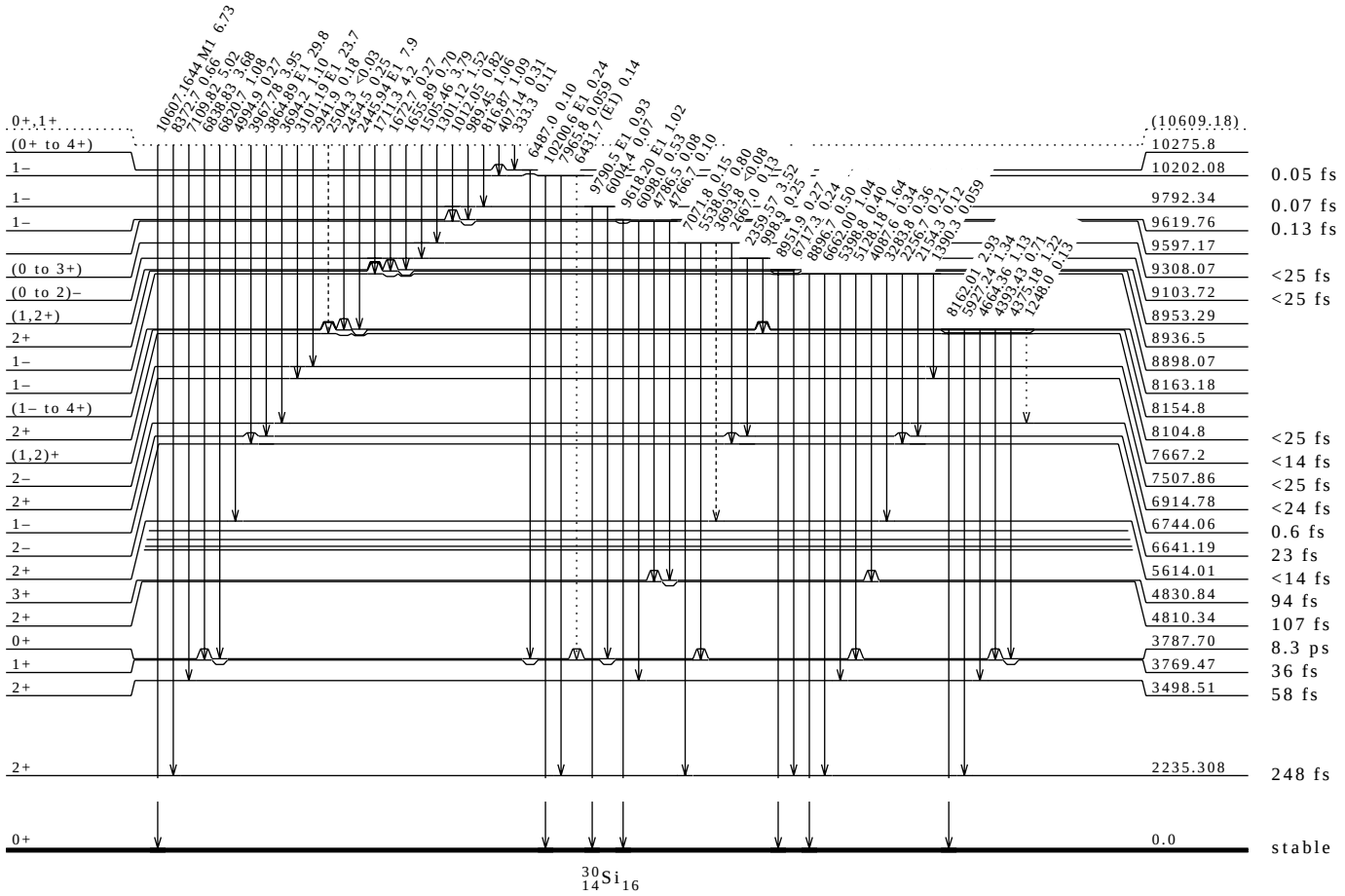
^{29}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

γ(^{30}Si) (continued)

† Absolute intensities per 100 neutron captures. For γ–ray cross section in mb (92Ra19), multiply by 1.1905 per 100 neutron captures.
‡ From adopted gammas, except as noted.
§ From 92Ra19.
# For intensity per 100 neutron captures, multiply by 1.
@ Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

Level Scheme

Intensities: I(γ+ce) per 100 parent decays

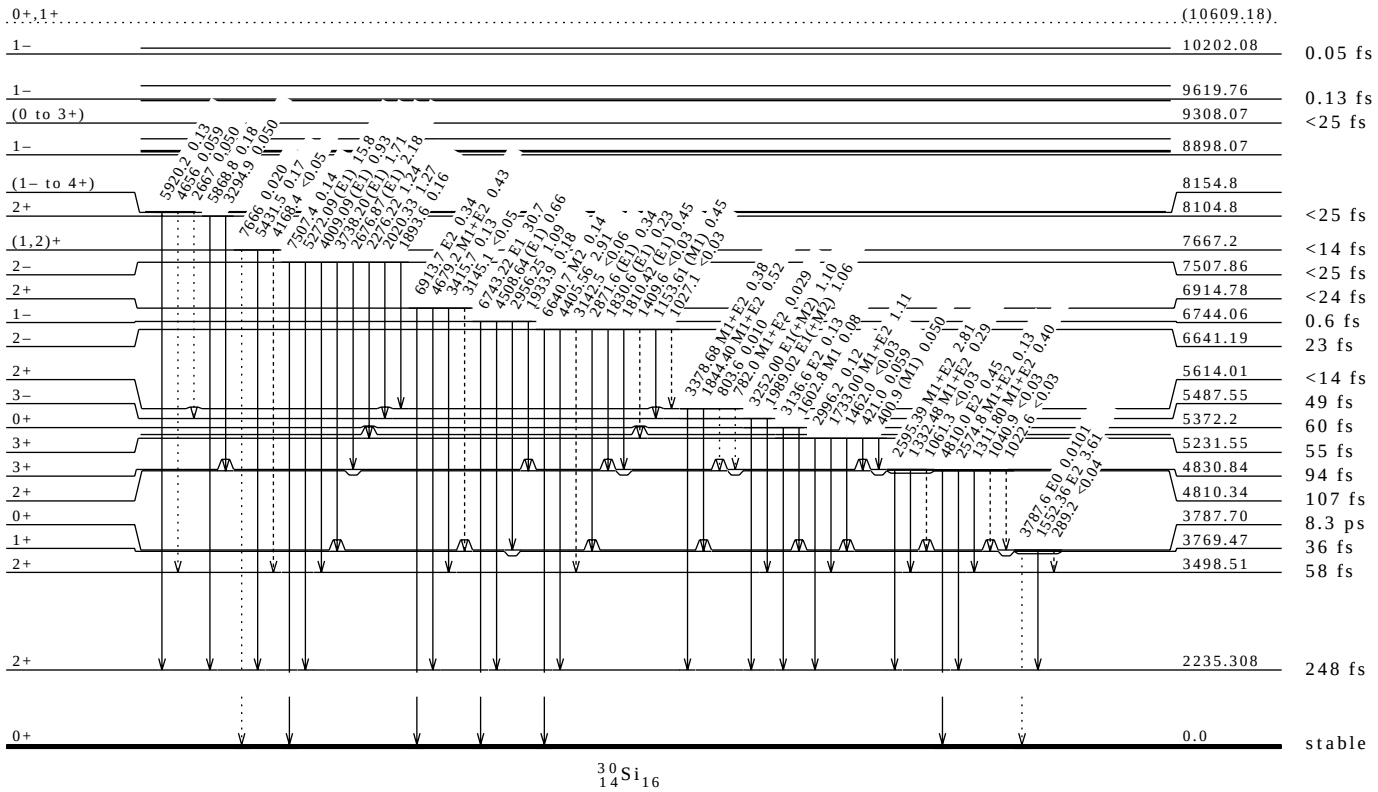


$^{30}_{14}Si_{16}$

^{29}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

Level Scheme (continued)

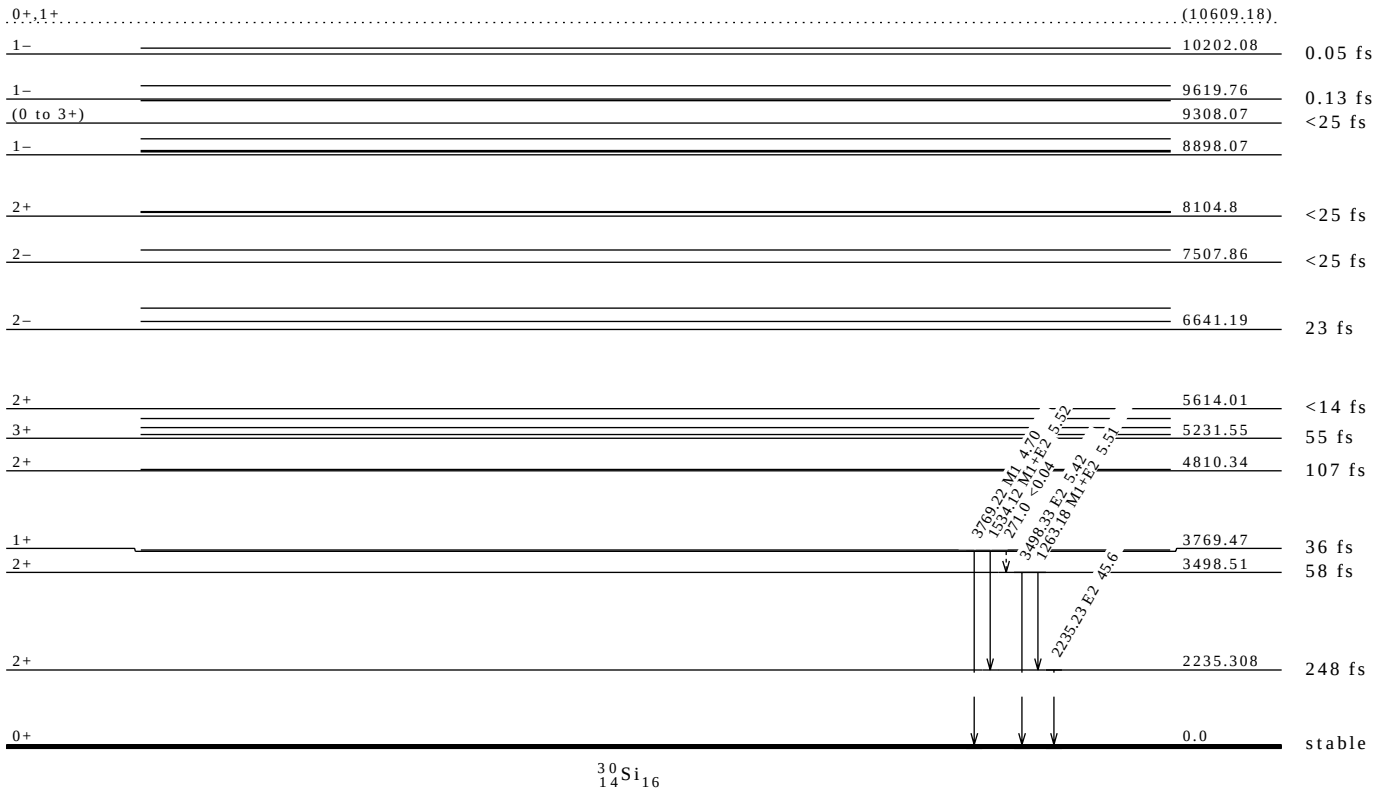
Intensities: I(γ+ce) per 100 parent decays



^{29}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays



$^{30}_{14}Si_{16}$

^{30}Si(n,γ) E=thermal 92Ra19,90Is02

Others: 90Is02, 90Is05.

Target Jπ=0+.

92Ra19: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=6587.40 keV *5*.

Other measured S(n)=6587.32 keV *20* (90Is02).

Evaluated S(n)=6587.40 keV *5* (95Au04).

Measured thermal–neutron capture cross section, σ(n,γ)=107 mb *3* (92Ra19), 107 mb *2* (90Is02,90Is05).

^{31}Si Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	3/2+	157.3 min *3*	
752.23 *3*	1/2+	530 fs *100*	
1694.92 *4*	5/2+	570 fs *110*	
2316.94 *10*	3/2+	38 ps *18*	

Continued on next page (footnotes at end of table)

^{30}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

^{31}Si Levels (continued)

E(level)‡	Jπ†	$T_{1/2}$†	Comments
2788.03 *6*	5/2+,(3/2)+	<30 fs	
3532.92 *3*	3/2−	<10 fs	
4382.37 *4*	3/2−		
5281.36 *4*	1/2+		
5873.15 *7*	(1/2,3/2)−		
5957.92 *19*			
(6587.40 *5*)	1/2+		E(level): from evaluated S(n) (95Au04). Jπ: from s−wave neutron capture. Observed deexcitation inrensity is 101% of g.s. feeding.

† From adopted levels, except as noted.
‡ From Eγ's using least−squares fit to data, except as noted.

γ(^{31}Si)

All data are from 92Ra19, except as noted.
Iγ normalization: renormalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ†#	Mult.‡	δ‡	Comments
622.19 *20*	2316.94	0.12 *3*	(M1)		σ(n,γ)=0.13 mb *3* (92Ra19).
629.43 *19*	(6587.40)	0.20 *3*			σ(n,γ)=0.21 mb *3* (92Ra19).
714.22 *6*	(6587.40)	0.87 *6*			σ(n,γ)=0.93 mb *6* (92Ra19).
745.1 *9*	3532.92	0.028 *10*			σ(n,γ)=0.03 mb *1* (92Ra19).
752.22 *3*	752.23	88 *3*	(M1)		σ(n,γ)=94.4 mb *30* (92Ra19).
849.45 *15*	4382.37	0.41 *5*			σ(n,γ)=0.44 mb *5* (92Ra19).
898.6 *7*	5281.36	0.065 *19*			σ(n,γ)=0.07 mb *2* (92Ra19).
943.2 *7*	1694.92	0.037 *10*			σ(n,γ)=0.04 mb *1* (92Ra19).
1216.0@	3532.92	<0.047			σ(n,γ)<0.05 mb (92Ra19).
1305.99 *4*	(6587.40)	17.0 *6*	M1§		σ(n,γ)=18.2 mb *6* (92Ra19).
1564.2 *4*	2316.94	0.15 *4*			σ(n,γ)=0.16 mb *4* (92Ra19).
1594.30 *6*	4382.37	0.96 *6*			σ(n,γ)=1.03 mb *6* (92Ra19).
1694.87 *5*	1694.92	3.70 *19*	M1+E2	+4.4 *7*	σ(n,γ)=3.96 mb *20* (92Ra19).
1748.38 *6*	5281.36	1.28 *7*			σ(n,γ)=1.37 mb *7* (92Ra19).
1837.92 *5*	3532.92	2.05 *12*			σ(n,γ)=2.19 mb *12* (92Ra19).
(2036.2)	2788.03	0.056 *19*			σ(n,γ)=0.06 mb *2*.
2065.6 *6*	4382.37	0.11 *3*			σ(n,γ)=0.12 mb *3* (92Ra19).
2204.95 *3*	(6587.40)	12.7 *5*	E1§		Iγ: 13.0 *19* (90Is02). σ(n,γ)=13.6 mb *5* (92Ra19).
2316.80 *14*	2316.94	0.67 *6*			σ(n,γ)=0.72 mb *6* (92Ra19).
2493.2@	5281.36	<0.075			σ(n,γ)<0.08 mb (92Ra19).
2687.35 *8*	4382.37	1.54 *10*			σ(n,γ)=1.65 mb *10* (92Ra19).
2780.56 *3*	3532.92	67.0 *23*	(E1)		Iγ: 69.6 *14* (90Is02). σ(n,γ)=71.7 mb *24* (92Ra19).
2787.90 *12*	2788.03	1.08 *9*			σ(n,γ)=1.16 mb *9* (92Ra19).
2964.26 *18*	5281.36	0.67 *7*			σ(n,γ)=0.72 mb *7* (92Ra19).
3054.33 *3*	(6587.40)	68.1 *22*	E1§		Iγ: 71.3 *12* (90Is02). σ(n,γ)=72.8 mb *23* (92Ra19).
3532.74 *8*	3532.92	1.66 *10*	(E1)		σ(n,γ)=1.78 mb *10* (92Ra19).
3586.2@	5281.36	<0.093			σ(n,γ)<0.10 mb (92Ra19).
3629.90 *4*	4382.37	7.6 *3*			Iγ: 7.5 *7* (90Is02). σ(n,γ)=8.1 mb *3* (92Ra19).
3640.2 *9*	5957.92	0.037 *19*			σ(n,γ)=0.04 mb *2* (92Ra19).
3798.2 *8*	(6587.40)	0.13 *4*			σ(n,γ)=0.14 mb *4* (92Ra19).
4270.1@	(6587.40)	<0.065			σ(n,γ)<0.07 mb (92Ra19).
4382.04 *14*	4382.37	1.73 *13*			σ(n,γ)=1.85 mb *14* (92Ra19).
4528.77 *4*	5281.36	14.7 *5*	M1		Iγ: 14.3 *5* (90Is02). σ(n,γ)=15.7 mb *5* (92Ra19).
4892.1@	(6587.40)	<0.093			σ(n,γ)<0.10 mb (92Ra19).
5280.9 *6*	5281.36	0.22 *4*			σ(n,γ)=0.24 mb *4* (92Ra19).
5834.2 *6*	(6587.40)	0.23 *4*			σ(n,γ)=0.25 mb *4* (92Ra19).
5872.37 *18*	5873.15	0.81 *9*			Iγ: 0.9 *3* (90Is02). σ(n,γ)=0.87 mb *9* (92Ra19).

Continued on next page (footnotes at end of table)

$^{31}_{14}Si_{17}$

^{30}Si(n,γ) E=thermal 92Ra19,90Is02 (continued)

γ(^{31}Si) (continued)

Eγ	E(level)	Iγ†#	Comments
5956.9 *8*	5957.92	0.11 *3*	σ(n,γ)=0.12 mb *3* (92Ra19).
6586.6457 *5*	(6587.40)	1.47 *13*	Iγ: 1.5 *2* (90Is02). σ(n,γ)=1.57 mb *14* (92Ra19).

† Absolute intensities per 100 neutron captures. For γ–ray cross section in mb (92Ra19), multiply by 1.0707 per 100 neutron captures.

‡ From adopted gammas, except as noted.

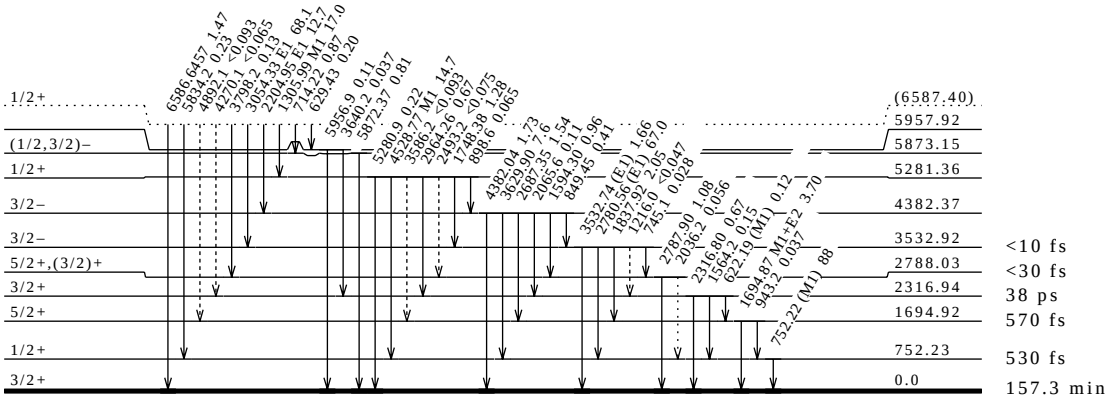
§ From 92Ra19.

For intensity per 100 neutron captures, multiply by 1.

@ Placement of transition in the level scheme is uncertain.

Level Scheme

Intensities: I(γ+ce) per 100 parent decays



$^{31}_{14}Si_{17}$

$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11

Target Jπ=1/2+.

89Mi16: measured Eγ, Iγ with a HpGe detector and a pair spectrometer. Deduced neutron separation energy S(n)=7935.74 keV *16*.

89Ze02: measured Eγ, Iγ with a Ge(Li) and a HpGe dectector. Deduced neutron separation energy S(n)=7936.65 keV *8*.

Other measured S(n)=7935.70 keV *4* (85Ke11).

Evaluated S(n)=7935.65 keV *4* (95Au04).

Measured thermal–neutron capture cross section, σ(n,γ)=173 mb *6* (89Ze02).

^{32}P Levels

E(level)[‡]	Jπ[†]	$T_{1/2}$[†]	Comments
0.0	1+	14.262 d *14*	%β⁻=100.
78.060 *18*	2+	278 ps *12*	
512.703 *20*	0+	1.83 ps *6*	
1149.384 *20*	1+	175 fs *6*	
1322.830 *25*	2+	324 fs *12*	
1755.01 *4*	3+	460 fs *35*	
2177.28 *5*	3+	43 fs *8*	
2217.75 *6*	2+	150 fs *25*	
2229.73 *3*	1+	25 fs *14*	
2313.45[#] *8*	(1+ to 3+)		
2579.12[#] *14*	(0 to 2)		
2657.64 *5*	2+	<7 fs	
2740.46 *5*	1+	50 fs *30*	
3073.90?[§#] *13*	(1+ to 3+)		
3263.998 *23*	2−	90 fs *20*	
3444.37 *4*	(1,2+)	25 fs *10*	
3791.40[#] *12*	1+	50 fs *30*	
4009.00 *5*	2−		
4035.57 *3*	1−		
4549.22[#] *13*	1+		
4661.53 *4*	2−		
4710.58 *17*	1+		
4877.45 *4*	1−		
5072.53 *8*	0+		
5307.58?[§#] *11*	(1,2)+		
5325.99?[§#] *14*			
5349.65 *4*	2−		
5509.41 *5*	1−		
5696.22?[@] *6*			
5701.49 *7*	(1,2)−		
5778.73 *3*	1−		
6062.14 *5*	1−		
6196.36 *5*	1−		
6332.54[#] *19*	(0,1)+		
6510.36[§#] *24*			
6557.99?[§#] *12*	(0+ to 3+)		
6581.89 *6*	(0+ to 3+)		
6783.69[#] *15*	(0+ to 3+)		
(7935.65 *4*)	0+,1+		E(level): from evaluated S(n) (95Au04). Jπ: from s–wave neutron capture. Observed deexcitation intensity is 93% of g.s. feeding.

[†] From adopted levels, except as noted.

[‡] From Eγ's using least–squares fit to data, except as noted.

[§] Not seen in 85Ke11.

[#] Not seen in 89Ze02.

[@] Seen in 89Ze02 and 85Ke11.

$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

γ(^{32}P)

All data are from 89Mi16, except as noted. Errors include systematic errors of 25% for 0.4<Eγ≤2 MeV; 15% for 2<Eγ≤3 MeV; 5% for Eγ>3 MeV.

Iγ normalization: renormalized from assuming I(γ+ce)(to g.s.)=100.

Eγ†	E(level)	Iγ§	Mult.‡	δ‡	Comments
78.099 *25*	78.060	36.69 *25*	(M1)		Iγ: from intensity balance. α=0.00938.
(432.15 *11*)	1755.01	0.061 *3*	M1+E2	−0.12 *10*	
(434.63 *4*)	512.703	0.061 *3*			Not observed.
(512.69 *3*)	512.703	50 *CA*	M1		Obscured by the 511−keV annihilation line. Iγ: from intensity balance. 37.9 *8* (89Ze02).
558.51 *8*	2313.45	0.62 *15*			
636.670 *28*	1149.384	21.2 *53*	M1		Iγ: 7.40 *2* (89Ze02).
[x]724.25 *28*		0.119 *30*			
745.04 *5*	4009.00	0.80 *20*			
754.52 *10*	6062.14	0.37 *9*			
771.51 *12*	4035.57	0.29 *7*			
[x]837.0 *5*		0.088 *22*			
895.10 *13*	2217.75	0.28 *7*	M1(+E2)	0.0 *3*	
902.65 *18*	2657.64	0.189 *47*	(M1)		
907.07 *25*	2229.73	0.135 *34*	(M1)		
1034.316 *41*	3263.998	1.43 *36*	(E1)		
(1068.38 *12*)	2217.75	0.10 *3*			
1071.270 *33*	1149.384	16.9 *42*	M1+E2	+0.14 *7*	
1149.331 *42*	1149.384	2.5 *6*			Iγ: 1.67 *2* (89Ze02).
1152.12[#] *18*	5701.49	0.24[#] *6*			
	(7935.65)	0.24[#] *6*			
[x]1198.98 *9*		0.51 *13*			
1208.92 *29*	6557.99?	0.154 *39*			
[x]1211.39 *33*		0.135 *34*			
1214.56 *9*	3444.37	0.51 *13*			Iγ: 0.30 *3* (89Ze02).
1217.65 *39*	4661.53	0.100 *25*			
[x]1222.31 *25*		0.148 *37*			
1229.44 *19*	5778.73	0.197 *49*			
1244.764 *39*	1322.830	2.4 *6*			Iγ: 1.72 *2* (89Ze02).
1256.24[#] *19*	2579.12	0.197[#] *49*			
	6581.89	0.197[#] *49*			
[x]1265.73 *11*		0.70 *17*			
[x]1269.79 *16*		0.39 *10*			
[x]1272.97 *16*		0.26 *6*			
1314.35 *19*	5349.65	0.21 *5*			
1318.94[#] *21*	3073.90?	0.192[#] *48*			
	6196.36	0.192[#] *48*			
1322.850 *38*	1322.830	3.8 *9*			Iγ: 3.83 *4* (89Ze02).
1340.64 *20*	5349.65	0.37 *9*			Iγ: 0.55 *2* (89Ze02).
1353.83 *6*	(7935.65)	0.84 *21*			Iγ: 0.56 *5* (89Ze02).
1377.83[#] *12*	4035.57	0.37[#] *9*			
	(7935.65)	0.37[#] *9*			
[x]1401.76 *21*		0.20 *5*			
1425.33 *24*	(7935.65)	0.172 *43*			
1429.89[#] *37*	2579.12	0.125[#] *31*			
	4009.00	0.125[#] *31*			
1432.66 *34*	4877.45	0.137 *34*			
1473.72 *10*	5509.41	0.44 *11*			
1509.017 *44*	3263.998	2.3 *6*	(E1)		Iγ: 1.80 *3* (89Ze02).
1587.36 *19*	4661.53	0.32 *8*			
1613.74[#] *12*	3791.40	0.35[#] *9*			
	4877.45	0.35[#] *9*			
1676.992 *45*	1755.01	2.9 *7*	M1+E2	−0.79 *8*	Iγ: 2.38 *1* (89Ze02).
1739.40 *5*	(7935.65)	1.48 *37*			Iγ: 1.07 *9* (89Ze02), 1.37 *7* (85Ke11).
(1754.94 *11*)	1755.01	0.064 *16*	E2(+M3)	0.0 *3*	
1800.42[@] *25*	6510.36	0.160 *40*			
1805.70 *35*	4035.57	0.73 *18*			
1808.49 *33*	4549.22	0.34 *9*			
1873.534 *49*	(7935.65)	2.2 *5*			Iγ: 1.91 *6* (89Ze02), 1.9 *1* (85Ke11).
1921.68 *29*	4661.53	0.143 *36*			

Continued on next page (footnotes at end of table)

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

γ(^{32}P) (continued)

Eγ†	E(level)	Iγ§	Mult.‡	δ‡	Comments
1941.160 *49*	3263.998	3.0 *8*	E1(+M2)	−0.1 *8*	Iγ: 2.60 *7* (89Ze02), 2.6 *1* (85Ke11).
2099.67 *12*	2177.28	0.324 *49*	M1+E2	+0.14 *3*	Iγ: 0.36 *2* (85Ke11).
2114.483 *41*	3263.998	8.1 *12*	E1(+M2)	+0.01 *3*	Iγ: 7.68 *7* (89Ze02), 7.5 *4* (85Ke11).
2136.62 *24*	4877.45	0.259 *39*			
(2139.65 *12*)	2217.75	0.14 *3*			
2151.621 *41*	2229.73	6.7 *10*			Iγ: 6.3 *11* (89Ze02), 7.3 *4* (85Ke11).
2156.954 *41*	(7935.65)	8.5 *13*			Iγ: 8.37 *8* (89Ze02), 8.6 *4* (85Ke11).
(2177.1 *3*)	2177.28	0.032 *3*	E2(+M3)	−0.09 *11*	
2217.52 *9*	2217.75	0.53 *8*	M1+E2	−0.5 *2*	Iγ: 0.10 *5* (89Ze02).
2227.80 *9*	2740.46	1.61 *24*	M1		
2229.86 *30*	2229.73	0.41 *6*			
2234.12 *7*	(7935.65)	0.84 *13*			Iγ: 0.44 *8* (89Ze02).
^{x}2266.71 *21*		0.217 *33*			
2276.34 *27*	5349.65	0.227 *34*			
2348.16 *17*	4661.53	0.281 *42*			
2426.30 *5*	(7935.65)	1.90 *29*			Iγ: 1.79 *7* (89Ze02), 1.83 *9* (85Ke11).
2431.87 *15*	4661.53	0.33 *5*			Iγ: 0.49 *10* (89Ze02), 0.30 *2* (85Ke11).
^{x}2445.50 *22*		0.228 *34*			
2514.68 *6*	5778.73	1.19 *18*			
2579.20 *35*	2657.64	0.68 *10*			Iγ: 0.45 *14* (89Ze02), 0.45 *2* (85Ke11).
2586.008 *48*	(7935.65)	6.3 *10*			Iγ: 5.73 *10* (89Ze02), 6.0 *3* (85Ke11).
2609.23# *21*	5349.65	0.144# *22*			Iγ: 0.19 *1* (85Ke11).
	(7935.65)	0.144# *22*			
2657.55 *6*	2657.64	2.02 *30*	M1+E2	+0.17 *3*	Iγ: 1.55 *18* (89Ze02), 1.79 *9* (85Ke11).
2685.99 *48*	4009.00	0.103 *15*			Iγ: 0.18 *3* (89Ze02), 0.19 *1* (85Ke11).
^{x}2702.4 *5*		0.096 *14*			
2712.76 *25*	4035.57	0.297 *45*			Iγ: 0.31 *2* (85Ke11).
2740.38 *11*	2740.46	0.52 *8*			Iγ: 0.55 *6* (89Ze02), 0.63 *6* (85Ke11).
2842.85 *28*	5072.53	0.170 *25*	M1		Iγ: 0.18 *6* (89Ze02).
2863.15 *11*	(7935.65)	2.05 *31*			Iγ: 2.39 *6* (89Ze02), 2.4 *1* (85Ke11).
2886.09 *6*	4035.57	4.1 *6*			Iγ: 4.7 *8* (89Ze02), 4.3 *2* (85Ke11).
(2931.50 *5*)	3444.37	0.35 *6*			
^{x}2933.65 *17*		0.33 *5*			
^{x}2953.72 *8*		0.96 *14*			
3058.174 *47*	(7935.65)	6.97 *35*			Iγ: 6.51 *11* (89Ze02), 7.2 *4* (85Ke11).
3119.86 *20*	5349.65	0.390 *19*			Iγ: 0.29 *5* (89Ze02).
3185.76 *6*	3263.998	1.99 *10*	(E1)		Iγ: 1.99 *6* (89Ze02), 2.1 *1* (85Ke11).
3196.9 *7*	5509.41	0.081 *4*			
3224.92 *19*	(7935.65)	0.342 *17*			Iγ: 0.30 *6* (89Ze02), 0.32 *2* (85Ke11).
^{x}3240.6 *5*		0.113 *6*			
3263.41 *20*	3263.998	0.406 *20*	E1+M2	−0.10 *3*	Iγ: 0.32 *7* (89Ze02), 0.26 *1* (85Ke11).
^{x}3267.53 *14*		0.648 *32*			
3274.055 *45*	(7935.65)	5.14 *26*			Iγ: 5.51 *13* (89Ze02), 5.4 *3* (85Ke11).
3338.84 *29*	4661.53	0.230 *12*			Iγ: 0.15 *1* (85Ke11).
3366.21 *10*	3444.37	0.683 *34*			Iγ: 0.60 *10* (89Ze02), 0.75 *4* (85Ke11).
3387.4# *6*	4710.58	0.121# *6*			
	(7935.65)	0.121# *6*			
3444.27 *10*	3444.37	0.726 *36*			Iγ: 0.77 *7* (89Ze02), 0.77 *4* (85Ke11).
3482.89# *36*	5701.49	0.160# *8*			Iγ: 0.10 *4* (89Ze02), 0.18 *1* (85Ke11).
	6062.14	0.160# *8*			
^{x}3504.01 *47*		0.150 *7*			
3511.58 *28*	4661.53	0.248 *12*			Iγ: 0.38 *5* (89Ze02), 0.45 *2* (85Ke11).
3518.75 *4*	5696.22?				Iγ: 0.46 *2* (85Ke11).
3522.708 *44*	4035.57	13.3 *7*			Iγ: 14.57 *26* (89Ze02), 14.4 *7* (85Ke11).
3548.74 *10*	5778.73	0.860 *43*			Iγ: 0.69 *11* (89Ze02), 0.92 *5* (85Ke11).
3554.38 *14*	4877.45	0.527 *26*			Iγ: 0.34 *17* (89Ze02), 0.52 *3* (85Ke11).
3560.5# *5*	4710.58	0.145# *7*			Iγ: 0.12 *1* (85Ke11).
	5778.73	0.145# *7*			
3713.86 *44*	3791.40	0.174 *9*	M1+E2	+0.6 *5*	
^{x}3774.6 *5*		0.109 *5*			
3899.946 *47*	(7935.65)	17.8 *9*			Iγ: 17.34 *14* (89Ze02), 19.2 *10* (85Ke11).
3922.90 *10*	5072.53	1.86 *9*	M1		Iγ: 1.69 *5* (89Ze02), 1.75 *9* (85Ke11).
3926.48 *10*	(7935.65)	2.24 *11*			Iγ: 2.59 *8* (89Ze02), 2.5 *1* (85Ke11).

Continued on next page (footnotes at end of table)

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

γ(^{32}P) (continued)

Eγ†	E(level)	Iγ§	Mult.‡	δ‡	Comments
3930.19 *19*	4009.00	0.658 *33*			Iγ: 0.69 *4* (89Ze02), 0.70 *4* (85Ke11).
3945.9 *9*	5701.49	0.067 *3*			
3956.97 *11*	4035.57	0.633 *32*			Iγ: 0.20 *10* (89Ze02), 0.56 *3* (85Ke11).
4003.3# *8*	5325.99?	0.069# *3*			
	6581.89	0.069# *3*			
4008.66 *9*	4009.00	0.742 *37*			Iγ: 1.07 *7* (89Ze02), 0.81 *4* (85Ke11).
4026.6 *10*	5349.65	0.049 *2*			Iγ: 0.06 *1* (85Ke11).
4035.6# *11*	4035.57	0.045# *2*			
	4549.22	0.045# *2*	M1		
4043.2 *8*	6783.69	0.064 *3*			
x4071.92 *19*		0.279 *14*			
4125.73 *31*	6783.69	0.237 *12*			
4142.75 *26*	(7935.65)	0.208 *10*			
4199.92 *6*	5349.65	3.12 *16*	E1(+M2)	+0.04 *7*	Iγ: 3.53 *9* (89Ze02), 3.4 *2* (85Ke11).
4246.4 *18*	6557.99?	0.036 *2*			
x4278.3 *7*		0.069 *3*			
4359.83 *9*	5509.41	1.19 *6*			Iγ: 1.84 *10* (89Ze02), 1.09 *6* (85Ke11).
4364.45 *6*	4877.45	4.44 *22*	E1		Iγ: 4.36 *12* (89Ze02), 4.7 *2* (85Ke11).
x4410.37 *15*		0.387 *19*			
4456.26 *27*	5778.73	0.196 *10*			Iγ: 0.10 *4* (89Ze02), 0.21 *1* (85Ke11).
x4466.2 *9*		0.054 *3*			
4491.07 *6*	(7935.65)	2.01 *10*			Iγ: 2.56 *10* (89Ze02), 2.2 *1* (85Ke11).
4551.6 *7*	5701.49	0.066 *3*			Iγ: 0.05 *1* (85Ke11).
x4579.8 *9*		0.056 *3*			
4629.08 *27*	5778.73	0.448 *22*			Iγ: 0.67 *9* (89Ze02), 0.50 *3* (85Ke11).
4632.0 *9*	4710.58	0.139 *7*			Iγ: 0.15 *1* (85Ke11).
x4644.1 *5*		0.101 *5*			
4661.11 *6*	4661.53	3.52 *18*			Iγ: 4.52 *15* (89Ze02), 3.7 *2* (85Ke11).
4671.39 *5*	(7935.65)	11.8 *6*			Iγ: 13.42 *31* (89Ze02), 12.8 *6* (85Ke11).
4738.80 *38*	6062.14	0.213 *11*			Iγ: 0.10 *5* (89Ze02), 0.19 *1* (85Ke11).
x4766.10 *22*		0.246 *12*			
4792.9 *11*	5307.58?	0.048 *2*			
4799.56 *30*	4877.45	0.186 *9*			Iγ: 0.21 *1* (85Ke11), 0.21 *1* (85Ke11).
4811.2 *10*	5325.99?	0.064 *3*			
4860.5 *9*	(7935.65)	0.076 *4*			
4876.78 *11*	4877.45	0.634 *32*			Iγ: 1.03 *20* (89Ze02), 0.70 *4* (85Ke11).
4912.30 *11*	6062.14	0.686 *34*			Iγ: 0.74 *10* (89Ze02), 0.77 *4* (85Ke11).
x5067.9 *17*		0.045 *2*			
5071.4 *13*	5072.53	0.052 *3*	M1		Iγ: 0.09 *1* (85Ke11).
x5114.3 *9*		0.051 *3*			
x5122.3 *5*		0.086 *4*			
5180.9 *8*	6332.54	0.042 *2*			
5182.91@ *13*	5696.22?				Iγ: 0.10 *4* (89Ze02), 0.21 *1* (85Ke11).
5194.92 *7*	(7935.65)	1.29 *6*			Iγ: 1.86 *6* (89Ze02), 1.37 *7* (85Ke11).
5228.0 *8*	5307.58?	0.044 *2*			
5265.47 *7*	5778.73	3.07 *15*			Iγ: 3.34 *14* (89Ze02), 3.2 *2* (85Ke11).
5277.73 *7*	(7935.65)	1.12 *6*			Iγ: 1.61 *6* (89Ze02), 1.25 *6* (85Ke11).
5306.7 *9*	5307.58?	0.044 *2*			
5326.8 *9*	5325.99?	0.040 *2*			
x5340.5 *16*		0.026 *1*			
5349.03 *20*	5349.65	0.237 *12*			Iγ: 0.12 *4* (89Ze02), 0.19 *1* (85Ke11).
5355.2 *9*	(7935.65)	0.067 *3*			
5359.8 *10*	6510.36	0.061 *1*			
x5366.9 *13*		0.038 *2*			
x5379.2 *5*		0.081 *4*			
5431.35# *24*	5509.41	0.162# *8*			
	6581.89	0.162# *8*			Iγ: 0.10 *1* (85Ke11).
x5437.9 *14*		0.026 *1*			
x5452.4 *5*		0.065 *3*			
x5474.85 *29*		0.118 *6*			
5508.2 *6*	5509.41	0.058 *3*			Iγ: 0.04 *1* (85Ke11).
5549.27 *30*	6062.14	0.142 *7*			Iγ: 0.14 *1* (85Ke11).
5622.17# *37*	5701.49	0.095# *5*			Iγ: 0.13 *1* (85Ke11).

Continued on next page (footnotes at end of table)

$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

γ(^{32}P) (continued)

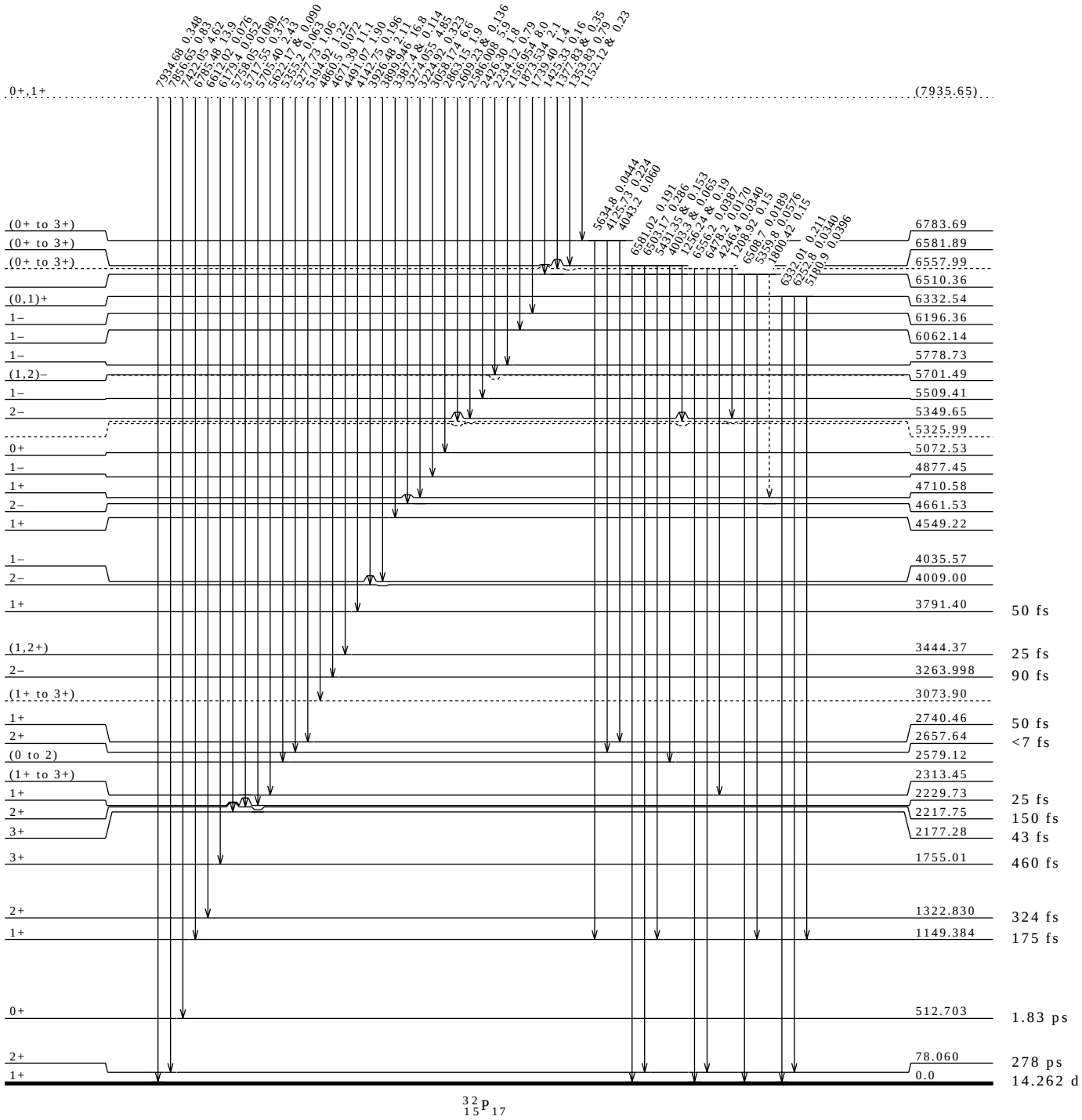
Eγ†	E(level)	Iγ§	Comments
5622.17# *37*	(7935.65)	0.095# *5*	
5634.8 *7*	6783.69	0.047 *2*	
5683.20 *12*	6196.36	0.387 *19*	Iγ: 0.86 *6* (89Ze02), 0.40 *2* (85Ke11).
5700.31 *14*	5778.73	0.610 *30*	Iγ: 0.54 *6* (89Ze02), 0.67 *3* (85Ke11).
5705.40 *7*	(7935.65)	2.57 *13*	Iγ: 2.91 *19* (89Ze02), 2.7 *1* (85Ke11).
5717.55 *13*	(7935.65)	0.397 *20*	Iγ: 0.22 *5* (89Ze02), 0.42 *2* (85Ke11).
x5745.5 *7*		0.063 *3*	
x5751.69 *47*		0.107 *5*	
5758.05 *5*	(7935.65)	0.085 *4*	Iγ: 0.014 *3* (85Ke11).
5778.13 *8*	5778.73	0.959 *48*	Iγ: 1.27 *5* (89Ze02), 0.93 *5* (85Ke11).
5983.4 *6*	6062.14	0.064 *3*	Iγ: 0.05 *1* (85Ke11).
x6050.5 *7*		0.052 *3*	
6061.40 *12*	6062.14	0.422 *21*	Iγ: 0.30 *6* (89Ze02), 0.44 *2* (85Ke11).
x6091.60 *46*		0.148 *7*	
6117.63 *32*	6196.36	0.144 *7*	Iγ: 0.10 *3* (89Ze02), 0.14 *1* (85Ke11).
6179.4 *7*	(7935.65)	0.055 *3*	Iγ: 0.05 *1* (85Ke11).
6195.87 *13*	6196.36	0.362 *18*	Iγ: 0.37 *10* (89Ze02), 0.37 *2* (85Ke11).
6252.8 *10*	6332.54	0.036 *2*	
x6275.1 *6*		0.083 *4*	
x6281.45 *39*		0.152 *8*	
x6287.5 *5*		0.112 *6*	
x6294.25 *26*		0.183 *9*	
6332.01 *19*	6332.54	0.223 *11*	
x6397.5 *24*		0.039 *2*	
x6419.57 *40*		0.175 *9*	
6478.2 *19*	6557.99?	0.018 *1*	
x6496.7 *22*		0.027 *1*	
6503.17 *27*	6581.89	0.303 *15*	Iγ: 0.16 *3* (89Ze02), 0.28 *1* (85Ke11).
6508.7 *30*	6510.36	0.020 *1*	
x6517.4 *7*		0.056 *3*	
6556.2 *9*	6557.99?	0.041 *2*	
6581.02 *21*	6581.89	0.202 *10*	Iγ: 0.22 *4* (89Ze02), 0.21 *1* (85Ke11).
6612.02 *40*	(7935.65)	0.081 *4*	Iγ: 0.08 *1* (85Ke11).
x6671.0 *12*		0.042 *2*	
x6676.9 *14*		0.036 *2*	
x6759.3 *8*		0.050 *2*	
6785.48 *7*	(7935.65)	14.7 *7*	Iγ: 15.56 *22* (89Ze02), 15.5 *8* (895ke11).
x6823.9 *7*		0.062 *3*	
x6836.4 *8*		0.052 *3*	
x6860.73 *39*		0.100 *5*	
x7018.4 *8*		0.051 *3*	
x7058.09 *47*		0.083 *4*	
x7160.5 *6*		0.068 *3*	
x7179.25 *24*		0.186 *9*	
x7244.72 *44*		0.090 *5*	
x7302.1 *18*		0.040 *2*	
x7336.48 *24*		0.184 *9*	
7422.05 *8*	(7935.65)	4.89 *24*	Iγ: 5.56 *22* (89Ze02), 4.9 *3* (85Ke11).
x7769.7 *6*		0.048 *2*	
7856.65 *9*	(7935.65)	0.875 *44*	Iγ: 1.05 *7* (89Ze02), 0.91 *5* (85Ke11).
x7914.98 *48*		0.034 *2*	
7934.68 *11*	(7935.65)	0.369 *21*	Iγ: 0.35 *5* (89Ze02), 0.40 *2* (85Ke11).

† The given errors include systematic errors of 20ppm for 0< Eγ≤2 MeV; 15ppm for 2<Eγ≤3 MeV; 10ppm for Eγ>3 MeV.
‡ From adopted gammas, except as noted.
§ For intensity per 100 neutron captures, multiply by 0.944.
# Multiply placed; undivided intensity given.
@ Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



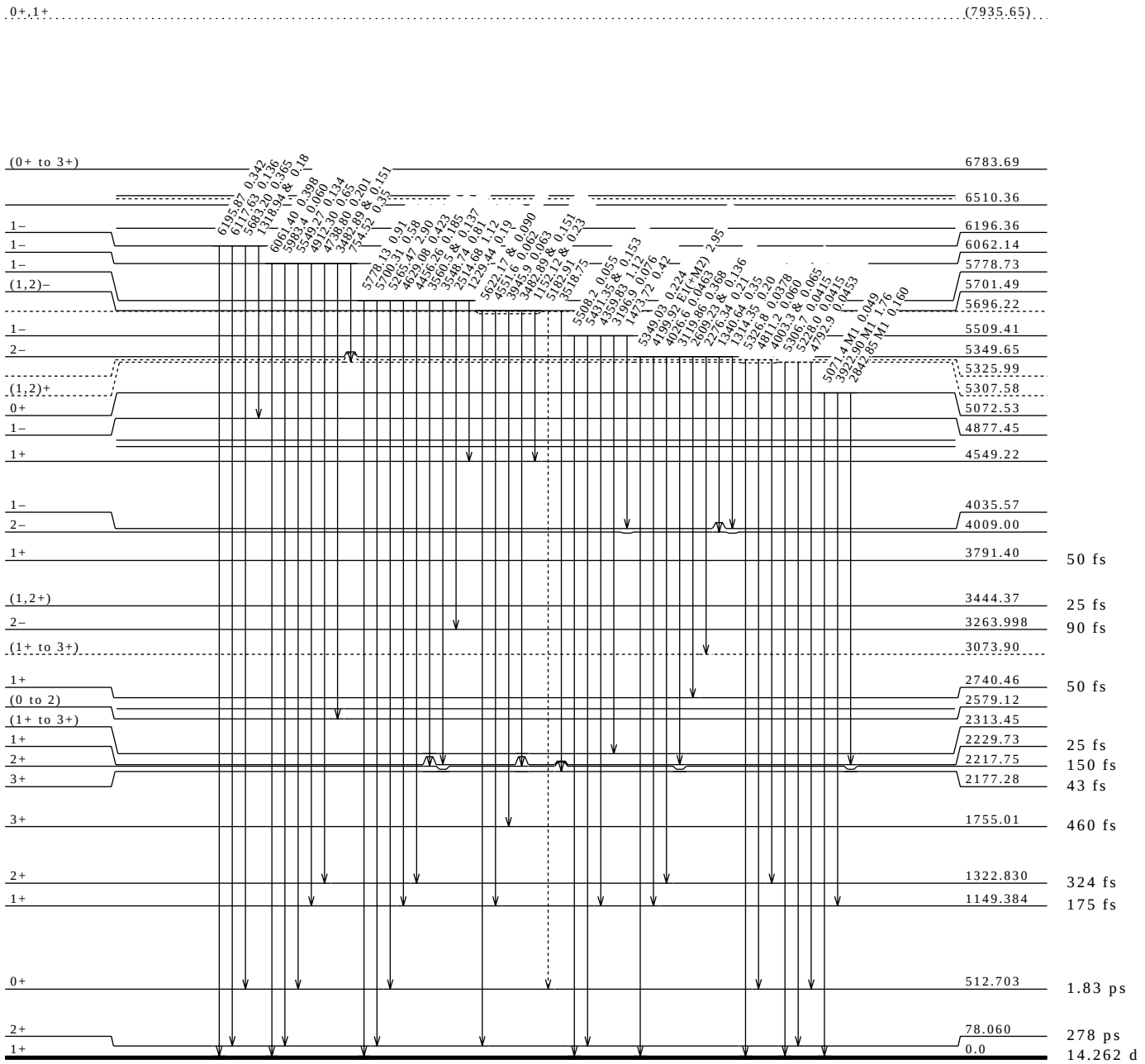
$^{32}_{15}P_{17}$

$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

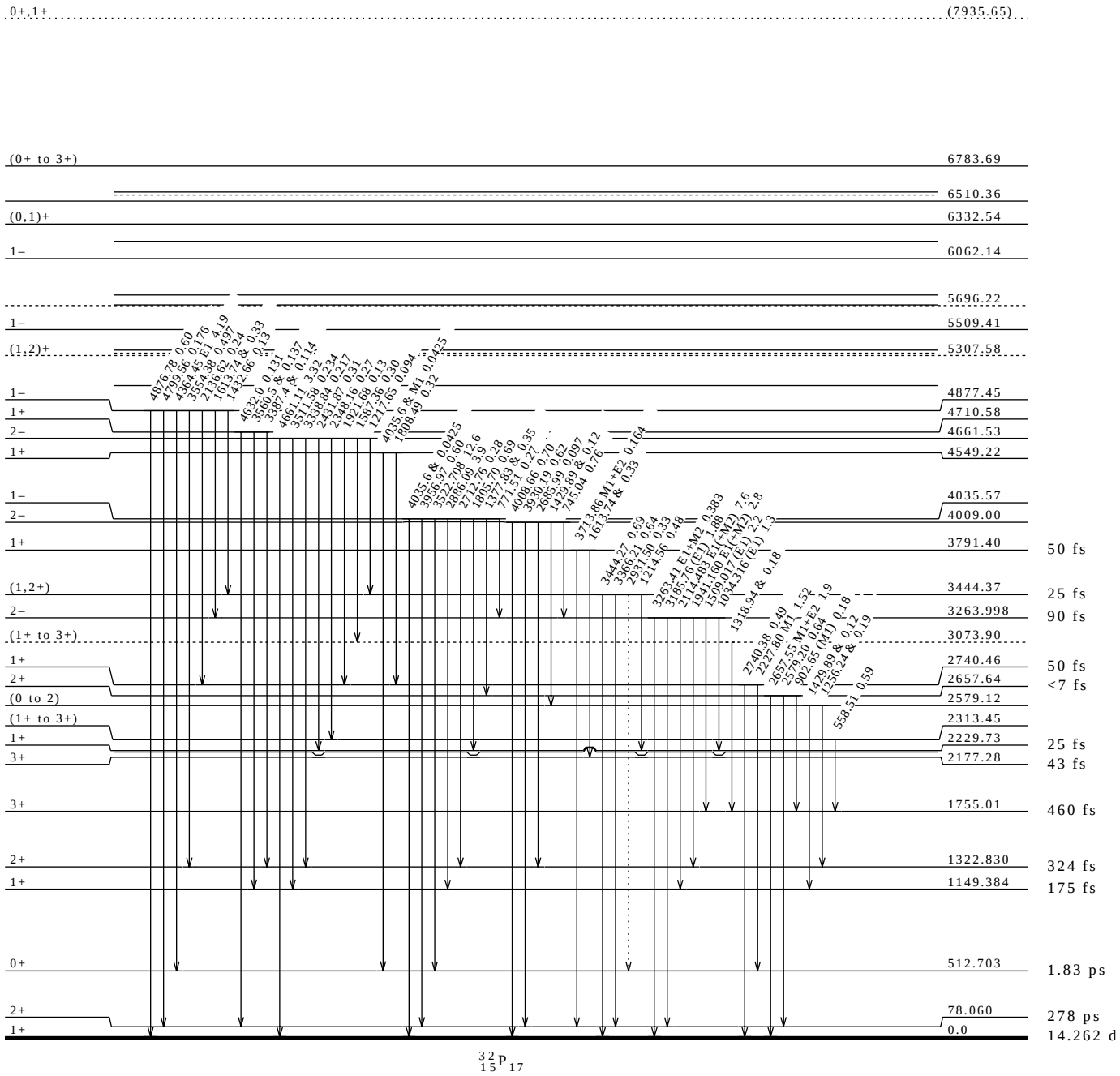


$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 89Mi16,89Ze02,85Ke11 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

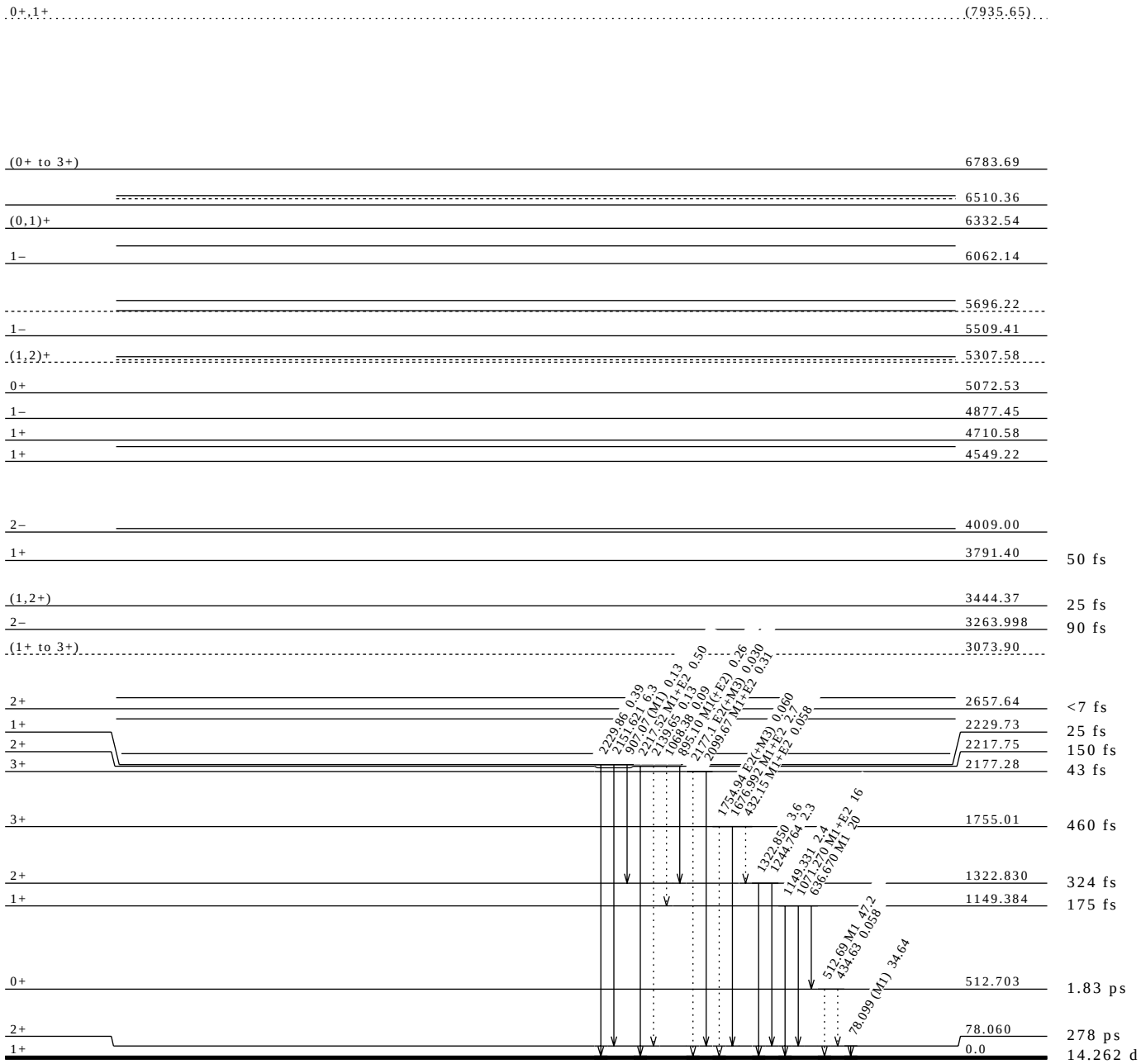


$^{32}_{15}P_{17}$

$^{31}P(n,\gamma)$ E=thermal 89Mi16,89Ze02,85Ke11 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



$^{33}_{16}S_{17}$

^{32}S(n,γ) E=thermal 85RA15,85KE08,

Target Jπ=0+.

85Ra15: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=8641.912 keV *23*.

85Ke08: measured Eγ, Iγ with a Ge(Li)–NaI(Tl). Deduced neutron separation energy S(n)=8641.60 keV *3*.

Other measured S(n)=8641.912 keV *53* (83Ra04), 8641.60 keV *7* (80Is02).

Evaluated S(n)=8641.58 keV *3* (95Au04).

Measured thermal–neutron capture cross section, σ(n,γ)=518 mb *14* (85Ra15).

^{33}S Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	3/2+	stable	
840.995 *12*	1/2+	1.17 ps *3*	
1967.17 *4*	5/2+	104 fs *14*	
2313.439 *14*	3/2+	107 ps *17*	
2867.708 *23*	5/2+	19 fs *8*	
2935.18 *20*	7/2–	28 fs *2*	
2968.6 *1*	7/2+	62 ps *11*	
3220.746 *14*	3/2–	28 fs *8*	
3832.1 *9*	5/2+	31 fs *6*	
3934.93 *6*	3/2+	24 fs *5*	
4055.51 *18*	1/2+	12 fs *8*	
4144.49 *6*	5/2	24 fs *5*	
4210.92 *3*	3/2–	32 fs *5*	
4423.81 *13*	(1/2+,3/2)	19 fs *9*	
4918.079 *19*	1/2–	90 fs *25*	
5286.1 *3*	(1/2,3/2,5/2+)		
5480.1 *3*	1/2+		
5613.11 *5*	1/2+		
5711.051 *18*	1/2–		
5888.58 *3*	3/2–		
6425.09 *3*	(1/2,3/2)–		
6676.97 *4*	(1/2+ to 5/2+)		
7187.96 *3*	3/2–		
7416.13 *3*	(1/2,3/2)–		
7488.47 *16*	(1/2,3/2,5/2+)		
7506.56 *3*	(1/2,3/2,5/2+)		
7616.00 *4*	(1/2+,3/2,5/2+)		
8368.33 *4*	(1/2,3/2,5/2+)		
(8641.58 *3*)	1/2+		E(level): from evaluated S(n) (95Au04). Jπ: from s–wave neutron capture. Observed deexcitation intensity is 101% of g.s. feeding.

† From adopted levels, except as noted.

‡ From Eγ's using least–squares fit to data, except as noted.

γ(^{33}S)

All data are from 85Ra15, except as noted.

Iγ normalization: renormalized from assming I(γ+ce)(to g.s.)=100.

Eγ	E(level)	Iγ#&	Mult.@	δ@	I(γ+ce)&	Comments
97.90 *4*	5711.051	0.0181 *20*	E1		0.0138	σ(n,γ)=0.092 mb *10* (85Ra15).
273.559 *24*	(8641.58)	0.067 *8*				σ(n,γ)=0.34 mb *4* (85Ra15).
346.19 *14*	2313.439	0.028 *6*				σ(n,γ)=0.141 mb *27* (85Ra15).
353.034 *19*	3220.746	0.28 *3*				σ(n,γ)=1.41 mb *14* (85Ra15).
707.07 *16*	4918.079	0.022 *4*				σ(n,γ)=0.11 mb *2* (85Ra15).
840.974 *14*	840.995	68.0 *70*	M1+E2	0.151 *4*		σ(n,γ)=345 mb *32* (85Ra15).
x856.44 *17*		0.037 *6*				σ(n,γ)=0.19 mb *3* (85Ra15).
862.55 *19*	4918.079	0.022 *4*				σ(n,γ)=0.11 mb *2* (85Ra15).
907.315 *20*	3220.746	0.28 *3*				σ(n,γ)=1.42 mb *13* (85Ra15).
923.48 *24*	4144.49	0.023 *6*				σ(n,γ)=0.117 mb *26* (85Ra15).
967.91 *32*	2935.18	0.020 *5*	E1(+M2)	–0.02 *2*		σ(n,γ)=0.104 mb *21* (85Ra15).
970.0 *6*	5888.58	0.012 *6*				σ(n,γ)=0.06 mb *3* (85Ra15).
983.20 *7*	4918.079	0.055 *8*				σ(n,γ)=0.28 mb *4* (85Ra15).

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^{32}S(n,γ) E=thermal 85RA15,85KE08, (continued)

γ(^{33}S) (continued)

Eγ	E(level)	Iγ#&	Mult.@	δ@	Comments
1025.874 *31*	(8641.58)	0.160 *16*			σ(n,γ)=0.81 mb *8* (85Ra15).
1067.1† *3*	3934.93	0.006† *4*			σ(n,γ)=0.03 mb *2* (85Ra15).
x1092.48 *15*		0.063 *10*			σ(n,γ)=0.32 mb *5* (85Ra15).
(1126.16)	1967.17	0.0099 *20*			σ(n,γ)=0.05 mb1.
1135.314 *17*	(8641.58)	0.49 *5*			σ(n,γ)=2.48 mb *23* (85Ra15).
1153.40§ *16*	(8641.58)	0.039§ *12*			σ(n,γ)=0.20 mb *6* (85Ra15).
x1164.71 *23*		0.028 *8*			σ(n,γ)=0.14 mb *4* (85Ra15).
1209.23 *27*	4144.49	0.026 *5*			σ(n,γ)=0.134 mb *21* (85Ra15).
1225.744 *15*	(8641.58)	0.67 *8*			σ(n,γ)=3.4 mb *4* (85Ra15).
1253.59 *4*	3220.746	0.189 *20*			σ(n,γ)=0.96 mb *10* (85Ra15).
1453.900 *19*	(8641.58)	0.56 *6*			σ(n,γ)=2.83 mb *26* (85Ra15).
1472.411 *13*	2313.439	1.81 *18*	M1+E2	−0.35 *3*	σ(n,γ)=9.2 mb *9* (85Ra15).
1500.15 *13*	5711.051	0.039 *8*			σ(n,γ)=0.20 mb *4* (85Ra15).
1518.7† *20*	3832.1	0.010† *4*	M1+E2	−0.23 *10*	σ(n,γ)=0.05 mb *2* (85Ra15).
1621.4† *3*	3934.93	0.0039† *20*			σ(n,γ)=0.02 mb *1* (85Ra15).
1677.96a *10*	5613.11	0.081a *12*			σ(n,γ)=0.41 mb *6* (85Ra15).
	5888.58	0.081a *12*			σ(n,γ)=0.41 mb *6* (85Ra15).
1697.296 *14*	4918.079	2.7 *3*			Iγ: 2.18 *15* (85Ke08). σ(n,γ)=13.5 mb *13* (85Ra15).
1744.06 *7*	5888.58	0.195 *22*			σ(n,γ)=0.99 mb *11* (85Ra15).
1897.48 *4*	4210.92	0.42 *4*	(E1)		σ(n,γ)=2.11 mb *20* (85Ra15).
1964.841 *31*	(8641.58)	1.40 *14*			Iγ: 1.14 *11* (85Ke08). σ(n,γ)=7.1 mb *7* (85Ra15).
1967.13 *6*	1967.17	0.81 *10*	M1+E2	−0.56 *3*	Iγ: 0.69 *8* (85Ke08). σ(n,γ)=4.1 mb *5* (85Ra15).
1967.6† *3*	3934.93	0.012† *6*			σ(n,γ)=0.06 mb *3* (85Ra15).
2110.3 *4*	4423.81	0.024 *8*			σ(n,γ)=0.12 mb *4* (85Ra15).
2214.00 *8*	6425.09	0.47 *6*			σ(n,γ)=2.40 mb *29* (85Ra15).
2216.729 *18*	(8641.58)	2.62 *24*			Iγ: 1.9 *1* (85Ke08). σ(n,γ)=13.3 mb *12* (85Ra15).
2280.54 *15*	6425.09	0.112 *20*			σ(n,γ)=0.57 mb *10* (85Ra15).
2313.401 *23*	2313.439	0.77 *8*	M1+E2	−33 *+73−67*	Iγ: 0.73 *9* (85Ke08). σ(n,γ)=3.9 mb *4* (85Ra15).
2379.657 *11*	3220.746	45 *5*	E1(+M2)	0.00 *2*	Iγ: 42.9 *7* (85Ke08). σ(n,γ)=230 mb *21* (85Ra15).
2456.12 *24*	4423.81	0.063 *10*			σ(n,γ)=0.32 mb *5* (85Ra15).
2465.84 *14*	6676.97	0.075 *14*			σ(n,γ)=0.38 mb *7* (85Ra15).
2490.221 *14*	5711.051	2.7 *3*			Iγ: 2.52 *16* (85Ke08). σ(n,γ)=13.5 mb *13* (85Ra15).
2532.07 *28*	6676.97	0.051 *8*			σ(n,γ)=0.26 mb *4* (85Ra15).
2667.72 *15*	5888.58	0.75 *10*			Iγ: 0.73 *9* (85Ke08). σ(n,γ)=3.8 mb *5* (85Ra15).
2753.26 *6*	(8641.58)	5.7 *6*			Iγ: 5.7 *2* (85Ke08). σ(n,γ)=28.7 mb *28* (85Ra15).
2867.54 *8*	2867.708	0.95 *10*	M1+E2	+0.114 *9*	Iγ: 0.82 *9* (85Ke08). σ(n,γ)=4.8 mb *5* (85Ra15).
2930.71 *7*	(8641.58)	17.1 *18*			Iγ: 17.0 *4* (85Ke08). σ(n,γ)=87 mb *9* (85Ra15).
2935.0† *6*	2935.18	0.017† *4*	M2+E3	−0.15 *2*	σ(n,γ)=0.088 mb *19* (85Ra15).
2973.0 *9*	5286.1	0.14 *3*			Iγ: 0.11 *2* (85Ke08). σ(n,γ)=0.70 mb *15* (85Ra15).
3020.35 *31*	5888.58	0.21 *5*			Iγ: 0.19 *3* (85Ke08). σ(n,γ)=1.05 mb *23* (85Ra15).
3029.1 *5*	(8641.58)	0.18 *4*			σ(n,γ)=0.93 mb *20* (85Ra15).
3093.7† *3*	3934.93	0.016† *6*			σ(n,γ)=0.08 mb *3* (85Ra15).
3161.60 *34*	(8641.58)	0.15 *3*			Iγ: 0.08 *1* (85Ke08). σ(n,γ)=0.74 mb *15* (85Ra15).
3220.59 *5*	3220.746	24.4 *24*	E1(+M2)	0.00 *9*	Iγ: 24.8 *5* (85Ke08). σ(n,γ)=124 mb *12* (85Ra15).
3355.35 *34*	(8641.58)	0.16 *4*			σ(n,γ)=0.81 mb *18* (85Ra15).
3369.78 *6*	4210.92	5.3 *6*	E1(+M2)	−0.005 *18*	Iγ: 5.5 *2* (85Ke08). σ(n,γ)=26.7 mb *26* (85Ra15).

Continued on next page (footnotes at end of table)

^{32}S(n,γ) E=thermal 85RA15,85KE08, (continued)

γ(^{33}S) (continued)

Eγ	E(level)	Iγ#&	Mult.@	Comments
3397.51 *8*	5711.051	1.10 *12*		Iγ: 1.06 *10* (85Ke08). σ(n,γ)=5.6 mb *6* (85Ra15).
3455.75 *25*	6676.97	0.19 *4*		Iγ: 0.19 *3* (85Ke08). σ(n,γ)=0.96 mb *16* (85Ra15).
3582.74 *29*	4423.81	0.071 *18*		Iγ: 0.07 *1* (85Ke08). σ(n,γ)=0.36 mb *9* (85Ra15).
3723.68 *4*	(8641.58)	2.7 *3*		Iγ: 2.72 *16* (85Ke08). σ(n,γ)=13.5 mb *13* (85Ra15).
3809.2 *5*	6676.97	0.065 *16*		Iγ: 0.061 *9* (85Ke08). σ(n,γ)=0.33 mb *8* (85Ra15).
3831.9 *9*	3832.1	0.033 *10*		σ(n,γ)=0.17 mb *5* (85Ra15).
3920.99 *22*	5888.58	0.136 *18*		σ(n,γ)=0.69 mb *9* (85Ra15).
3934.7 *12*	3934.93	0.057 *14*		σ(n,γ)=0.29 mb *7* (85Ra15).
4055.2 *5*	4055.51	0.057 *16*		Iγ: 0.049 *7* (85Ke08). σ(n,γ)=0.29 mb *8* (85Ra15).
4076.2 *7*	4918.079	0.069 *20*	E1	σ(n,γ)=0.35 mb *10* (85Ra15).
4144.36 *14*	4144.49	0.28 *4*		Iγ: 0.30 *4* (85Ke08). σ(n,γ)=1.41 mb *18* (85Ra15).
4217.53 *21*	(8641.58)	0.22 *3*		Iγ: 0.22 *3* (85Ke08). σ(n,γ)=1.14 mb *15* (85Ra15).
4363.14 *13*	6676.97	0.31 *4*		Iγ: 0.31 *5* (85Ke08). σ(n,γ)=1.57 mb *18* (85Ra15).
4423.5 *5*	4423.81	0.18 *4*		σ(n,γ)=0.90 mb *20* (85Ra15).
4430.75 *5*	(8641.58)	5.0 *5*		Iγ: 5.0 *2* (85Ke08). σ(n,γ)=25.2 mb *23* (85Ra15).
4444.1 *5*	5286.1	0.16 *6*		Iγ: 0.13 *2* (85Ke08). σ(n,γ)=0.80 mb *28* (85Ra15).
4638.8‡ *8*	5480.1	0.12‡ *3*		σ(n,γ)=0.63 mb *14* (85Ra15).
4708.7 *5*	6676.97	0.100 *22*		Iγ: 0.093 *14* (85Ke08). σ(n,γ)=0.51 mb *11* (85Ra15).
4771.1 *4*	5613.11	0.14 *4*		Iγ: 0.12 *2* (85Ke08). σ(n,γ)=0.73 mb *16* (85Ra15).
4869.56 *4*	5711.051	12.8 *12*	E1	Iγ: 12.7 *4* (85Ke08). σ(n,γ)=65 mb *6* (85Ra15).
4917.7 *6*	4918.079	0.11 *3*		Iγ: 0.12 *2* (85Ke08). σ(n,γ)=0.56 mb *13* (85Ra15).
5047.14 *4*	5888.58	3.2 *3*		Iγ: 3.2 *2* (85Ke08). σ(n,γ)=16.2 mb *15* (85Ra15).
5420.58 *4*	(8641.58)	59 *6*		Iγ: 60.0 *8* (85Ke08). σ(n,γ)=302 mb *27* (85Ra15).
5479.7 *8*	5480.1	0.022 *8*		σ(n,γ)=0.11 mb *4* (85Ra15).
5583.68 *8*	6425.09	1.48 *16*		Iγ: 1.6 *1* (85Ke08). σ(n,γ)=7.5 mb *8* (85Ra15).
5648.4 *6*	7616.00	0.059 *16*		Iγ: 0.054 *8* (85Ke08). σ(n,γ)=0.30 mb *8* (85Ra15).
5710.40 *25*	5711.051	0.18 *3*		Iγ: 0.20 *3* (85Ke08). σ(n,γ)=0.91 mb *13* (85Ra15).
5773.8 *5*	(8641.58)	0.071 *14*		Iγ: 0.09 *1* (85Ke08). σ(n,γ)=0.36 mb *7* (85Ra15).
5835.61 *20*	6676.97	0.162 *22*		Iγ: 0.15 *2* (85Ke08). σ(n,γ)=0.82 mb *11* (85Ra15).
5888.09 *8*	5888.58	0.75 *8*		Iγ: 0.80 *9* (85Ke08). σ(n,γ)=3.8 mb *4* (85Ra15).
6327.79 *23*	(8641.58)	0.126 *16*		Iγ: 0.12 *2* (85Ke08). σ(n,γ)=0.64 mb *8* (85Ra15).
6345.8 *9*	7187.96	0.017 *5*		Iγ: 0.017 *3* (85Ke08). σ(n,γ)=0.084 mb *24* (85Ra15).
6424.72 *28*	6425.09	0.110 *18*		Iγ: 0.13 *2* (85Ke08). σ(n,γ)=0.56 mb *9* (85Ra15).
6574.93 *22*	7416.13	0.118 *18*		Iγ: 0.12 *2* (85Ke08). σ(n,γ)=0.60 mb *9* (85Ra15).
6664.82 *15*	7506.56	0.23 *3*		Iγ: 0.22 *3* (85Ke08). σ(n,γ)=1.15 mb *13* (85Ra15).

Continued on next page (footnotes at end of table)

$^{32}S(n,\gamma)$ E=thermal 85RA15,85KE08, (continued)

$\gamma(^{33}S)$ (continued)

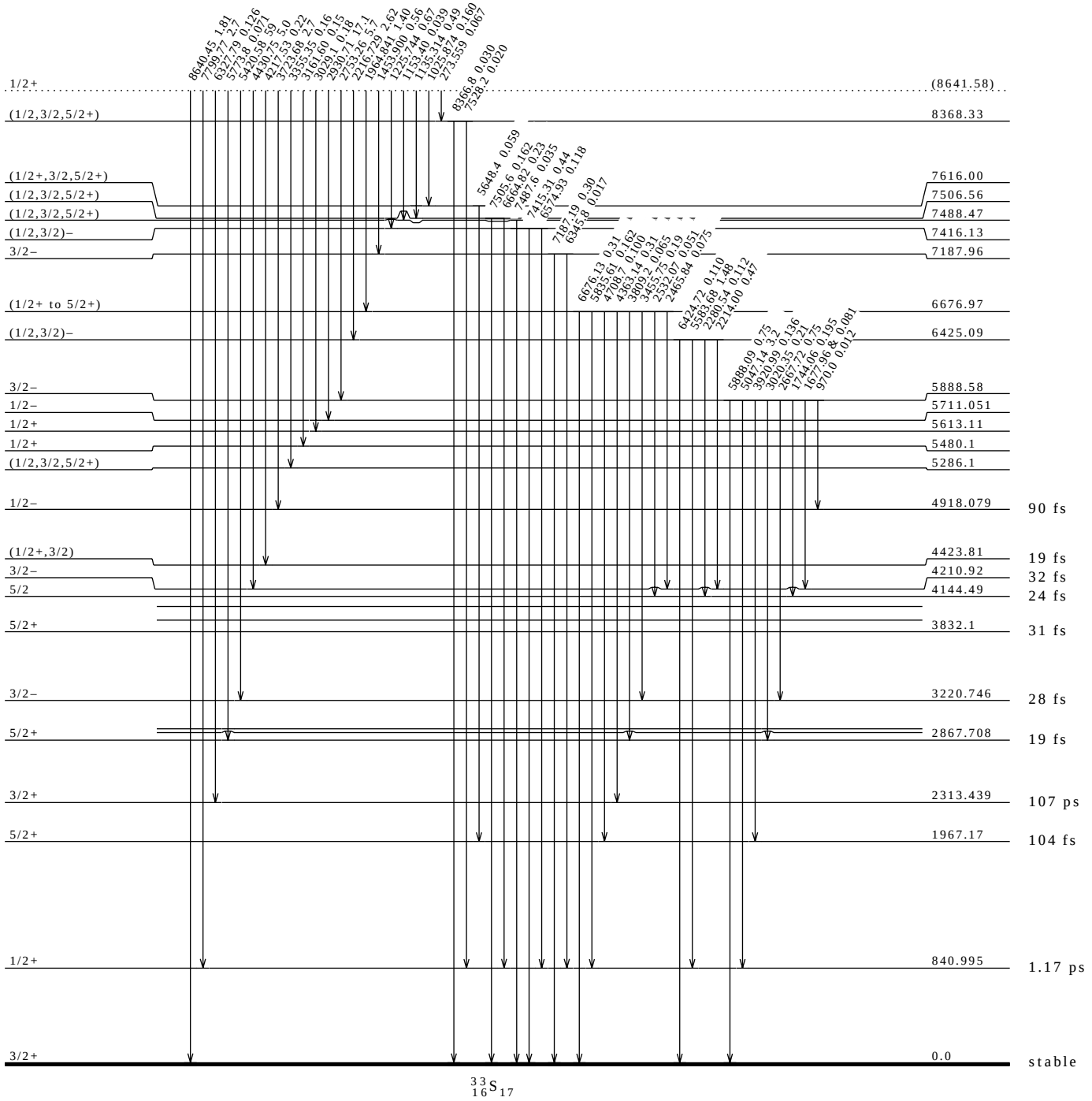
Eγ	E(level)	Iγ#&	Comments
6676.13 *13*	6676.97	0.31 *4*	Iγ: 0.23 *3* (85Ke08). σ(n,γ)=1.58 mb *16* (85Ra15).
x6958.3 *5*		0.045 *10*	σ(n,γ)=0.23 mb *5* (85Ra15).
7187.19 *15*	7187.96	0.30 *4*	Iγ: 0.33 *5* (85Ke08). σ(n,γ)=1.54 mb *17* (85Ra15).
7415.31 *15*	7416.13	0.44 *5*	Iγ: 0.47 *7* (85Ke08). σ(n,γ)=2.25 mb *25* (85Ra15).
7487.6 *9*	7488.47	0.035 *8*	σ(n,γ)=0.18 mb *4* (85Ra15).
7505.6 *4*	7506.56	0.162 *22*	Iγ: 0.12 *2* (85Ke08). σ(n,γ)=0.82 mb *11* (85Ra15).
7528.2 *9*	8368.33	0.020 *6*	σ(n,γ)=0.10 mb *3* (85Ra15).
x7614.9 *6*		0.051 *10*	σ(n,γ)=0.26 mb *5* (85Ra15).
7799.77 *12*	(8641.58)	2.7 *3*	Iγ: 2.89 *17* (85Ke08). σ(n,γ)=13.7 mb *14* (85Ra15).
8366.8 *6*	8368.33	0.030 *6*	σ(n,γ)=0.15 mb *3* (85Ra15).
8640.45 *12*	(8641.58)	1.81 *18*	Iγ: 2.02 *14* (85Ke08). σ(n,γ)=9.2 mb *9* (85Ra15).

† Not observed but inferred from the known level branching ratios.
‡ Not observed but inferred from the intensity balance requirement and the known branching ratio.
§ After corrections due to a γ–ray of similar energy in the $^{33}S(n,\gamma)^{34}S$ recation.
# Absolute intensities per 100 neutron captures. For γ–ray cross section in mb (85Ra15), multiply by 5.076 per 100 neutron captures.
@ From adopted gammas, except as noted.
& For intensity per 100 neutron captures, multiply by 1.
a Multiply placed; undivided intensity given.
x γ ray not placed in level scheme.

^{32}S(n,γ) E=thermal 85RA15,85KE08, (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

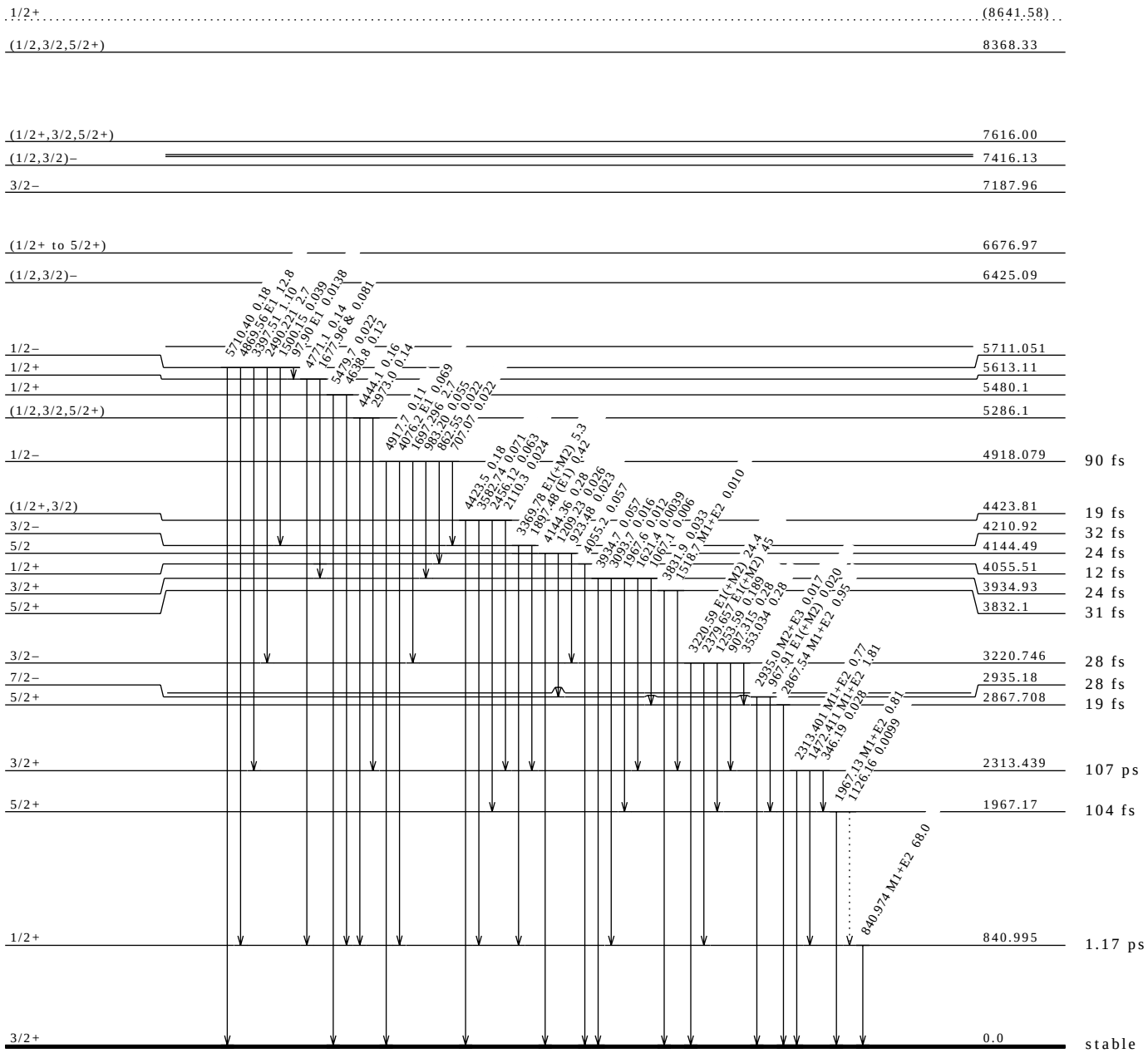


$^{33}_{16}S_{17}$

^{32}S(n,γ) E=thermal 85RA15,85KE08, (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



$^{34}_{16}S_{18}$

^{33}S(n,γ) E=thermal 85Ra15

Target Jπ=3/2+.

85Ra15: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=11417.217 keV *46*.

Other measured S(n)=11417.12 keV *10* (83Ra04).

Evaluated S(n)=11416.94 keV *5* (95Au04).

Measured thermal–neutron capture cross section, σ(n,γ)=454 mb *25* (85Ra15).

^{34}S Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	0+	stable	
2127.566 *13*	2+	325 fs *9*	
3304.216 *13*	2+	135 fs *10*	
3916.410 *21*	0+	1.11 ps *18*	
4074.669 *14*	1+	<20 fs	
4114.815 *23*	2+	70 fs *10*	
4624.410 *16*	3−	90 fs *10*	
4688.98 *4*	4+	85 fs *10*	
4876.846 *24*	3+	<50 fs	
4889.758 *22*	2+	<30 fs	
5228.178 *23*	0+		
5322.52 *3*	2−	17 fs *7*	
5380.99 *4*	1+	<50 fs	
5679.932 *17*	(2,3)−	265 fs *45*	
5755.882 *21*	1−		
5847.53 *3*	0+		
5998.10 *8*	2+	<7 fs	
6121.56 *10*	2+	<50 fs	
6168.87 *3*	3−	<9 fs	
6251.23 *19*	4+	270 fs *55*	
6251.68 *9*	(1,3)−	0.42 ps *+49−21*	
6342.53 *10*	1−	<25 fs	
6421.35 *8*	4−	<7 fs	
6428.13 *8*	2+		
6478.773 *22*	(1,2)−		
6685.34 *3*	(0 to 3)−		
6828.83 *18*	2+	<45 fs	
6847.90 *7*	(1,2+)		
6954.22 *3*	2−		
7110.46 *4*	3−	<7 fs	
7164.47 *17*	(0+ to 3+)		
7219.29 *7*	1−	0.33 fs *10*	
7248.05 *11*	2+	14 fs *6*	
7367.43 *10*	(1,2)+		
7467.74 *10*	(0+ to 3+)		
7552.70 *8*	(1 to 3−)		
7629.912 *21*	3−	14 fs *8*	
7730.80 *15*	(0+ to 3+)		
7781.22 *6*	1−	0.52 fs *8*	
7974.72 *16*	(1,2+)		
8036.31 *14*	(1−,2+)		
8138.09 *7*	1−		
8174.9 *4*	(1,2+)		
8185.46 *13*	1+	0.6 fs *2*	
8205.41 *8*	(1− to 4+)		
8294.40 *9*	(0+ to 3−)		
8385.41 *6*	1−	0.9 fs *3*	
8506.78 *4*	1−	0.28 fs *6*	
8615.74 *4*	(2,3+)		
8702.35 *13*	(1 to 3+)		
8727.64 *8*	(1−,2+)		
8805.63 *24*	(1,2+)		
8874.02 *6*	(1− to 3+)		
9026.31 *6*	(1,2+)		
9158.72 *3*	(1,2+)		
9208.04 *6*	(1,2+)		

Continued on next page (footnotes at end of table)

^{33}S(n,γ) E=thermal 85Ra15 (continued)

^{34}S Levels (continued)

E(level)‡	Jπ†	Comments
9546.09 *7*	(1,2+)	
9598.42 *8*		
9665.75 *4*		
9801.89 *10*	(1,2+)	
9836.70 *6*		
9933.37 *12*	1−	
10092.21 *15*		
10179.60 *6*	(1,2,3)	
10212.16 *5*	(1,2,3)	
10311.54 *3*	2+	
10650.13 *19*		
10840.62 *15*	3−	
11024.95 *11*	1−	
(11416.94 *5*)	1+,2+	E(level): from evaluated S(n) (95Au04). Jπ: from s−wave neutron capture. Observed deexcitation intensity is 85% of g.s. feeding.

† From adopted levels, except as noted.
‡ From Eγ's using least−squares fit to data, except as noted.

γ(^{34}S)

All data are from 85Ra15, except as noted.
Iγ normalization: renormalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ§@	Mult.#	δ#	I(γ+ce)@	Comments
x95.45 *18*		0.0026 *7*				σ(n,γ)=0.012 mb *3* (85Ra15).
x229.71 *16*		0.0119 *22*				σ(n,γ)=0.054 mb *10* (85Ra15).
281.34 *24*	7110.46	0.0051 *18*				σ(n,γ)=0.023 mb *8* (85Ra15).
306.63 *16*	6428.13	0.020 *5*				σ(n,γ)=0.089 mb *20* (85Ra15).
334.21 *15*	9208.04	0.0092 *22*				σ(n,γ)=0.042 mb *10* (85Ra15).
392.28 *11*	(11416.94)	0.027 *5*				σ(n,γ)=0.124 mb *20* (85Ra15).
516.86 *12*	8702.35	0.070 *11*				σ(n,γ)=0.32 mb *5* (85Ra15).
571.7 *6*	6251.68	0.018 *7*				σ(n,γ)=0.08 mb *3* (85Ra15).
576.80 *19*	(11416.94)	0.032 *5*				σ(n,γ)=0.146 mb *21* (85Ra15).
612.16 *5*	3916.410	0.058 *7*	E2			σ(n,γ)=0.263 mb *28* (85Ra15).
631.13 *6*	6478.773	0.062 *7*				σ(n,γ)=0.283 mb *31* (85Ra15).
672.00 *10*	9546.09	0.033 *5*				σ(n,γ)=0.152 mb *20* (85Ra15).
698.18 *13*	5322.52	0.022 *3*	(M1)			σ(n,γ)=0.101 mb *14* (85Ra15).
722.95 *14*	6478.773	0.039 *5*				σ(n,γ)=0.175 mb *22* (85Ra15).
725.25 *22*	9933.37	0.025 *5*				σ(n,γ)=0.115 mb *19* (85Ra15).
x743.50 *20*		0.022 *4*				σ(n,γ)=0.098 mb *15* (85Ra15).
748.43 *14*	10840.62	0.028 *4*				σ(n,γ)=0.127 mb *17* (85Ra15).
x752.30 *8*		0.049 *6*				σ(n,γ)=0.222 mb *26* (85Ra15).
767.20 *21*	(11416.94)	0.022 *4*				σ(n,γ)=0.098 mb *16* (85Ra15).
770.428 *20*	4074.669	0.61 *6*				σ(n,γ)=2.75 mb *25* (85Ra15).
789.1 *6*	5679.932	0.086 *16*	(E1)			σ(n,γ)=0.39 mb *7* (85Ra15).
798.92 *10*	6478.773	0.064 *9*				σ(n,γ)=0.29 mb *4* (85Ra15).
803.103 *27*	5679.932	0.251 *25*	(E1)			σ(n,γ)=1.14 mb *11* (85Ra15).
846.1 *13*	6168.87	0.06 *4*				σ(n,γ)=0.28 mb *18* (85Ra15).
925.79 *14*	8036.31	0.038 *5*				σ(n,γ)=0.171 mb *21* (85Ra15).
929.436 *21*	6685.34	0.235 *22*				σ(n,γ)=1.07 mb *10* (85Ra15).
941.59 *6*	7110.46	0.090 *11*				σ(n,γ)=0.41 mb *5* (85Ra15).
982.68 *9*	9598.42	0.041 *6*				σ(n,γ)=0.187 mb *27* (85Ra15).
989.08& *28*	7110.46	0.017& *5*				σ(n,γ)=0.079 mb *23*(85Ra15).
	7467.74	0.017& *5*				σ(n,γ)=0.079 mb *23* (85Ra15).
x1029.23 *8*		0.070 *9*				σ(n,γ)=0.32 mb *4* (85Ra15).
x1035.82 *17*		0.024 *7*				σ(n,γ)=0.108 mb *31* (85Ra15).
1055.491 *20*	5679.932	1.54 *16*				σ(n,γ)=7.0 mb *7* (85Ra15).
1105.673 *21*	(11416.94)	0.33 *3*				σ(n,γ)=1.49 mb *14* (85Ra15).
1113.27 *9*	5228.178	0.090 *14*	E1			σ(n,γ)=0.41 mb *6* (85Ra15).
1121.33 *9*	5998.10	0.077 *11*	(M1)			σ(n,γ)=0.35 mb *5* (85Ra15).

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$^{34}_{16}S_{18}$

^{33}S(n,γ) E=thermal 85Ra15 (continued)

γ(^{34}S) (continued)

Eγ	E(level)	Iγ§@	Mult.#	δ#	I(γ+ce)@	Comments
1153.492 *20*	5228.178	2.20 *20*	M1			σ(n,γ)=10.0 mb *9* (85Ra15).
1156.39 *7*	6478.773	0.35 *4*				σ(n,γ)=1.57 mb *18* (85Ra15).
x1164.83 *25*		0.046 *13*				σ(n,γ)=0.21 mb *6* (85Ra15).
1176.650 *20*	3304.216	16.5 *16*	M1+E2	−0.16 *2*		σ(n,γ)=75 mb *7* (85Ra15).
1205.05 *4*	(11416.94)	0.134 *14*				σ(n,γ)=0.61 mb *6* (85Ra15).
1210.04 *13*	7552.70	0.036 *5*				σ(n,γ)=0.162 mb *22* (85Ra15).
1237.61 *5*	(11416.94)	0.114 *14*				σ(n,γ)=0.52 mb *6* (85Ra15).
1244.32 *21*	8874.02	0.026 *6*				σ(n,γ)=0.120 mb *26* (85Ra15).
1247.92 *6*	5322.52	0.130 *16*	(E1)			σ(n,γ)=0.59 mb *7* (85Ra15).
1266.11 *5*	5380.99	0.145 *16*				σ(n,γ)=0.66 mb *7* (85Ra15).
1274.30 *4*	6954.22	0.257 *25*				σ(n,γ)=1.17 mb *11* (85Ra15).
x1277.81 *18*		0.042 *6*				σ(n,γ)=0.190 mb *26* (85Ra15).
1320.169 *20*	4624.410	8.4 *9*	E1(+M2)	−0.02 *4*		σ(n,γ)=38 mb *4* (85Ra15).
1325.22 *26*	(11416.94)	0.073 *16*				σ(n,γ)=0.33 mb *7* (85Ra15).
1353.46 *16*	7781.22	0.084 *11*	(E1)			σ(n,γ)=0.38 mb *5* (85Ra15).
1364.4 *4*	10092.21	0.070 *20*				σ(n,γ)=0.32 mb *9* (85Ra15).
1374.34 *20*	6251.23	0.081 *18*	M1+E2	−3.7 *+7−26*		σ(n,γ)=0.37 mb *8* (85Ra15).
x1435.00 *11*		0.066 *11*				σ(n,γ)=0.30 mb *5* (85Ra15).
x1443.05 *10*		0.081 *11*				σ(n,γ)=0.37 mb *5* (85Ra15).
1469.67 *24*	7467.74	0.051 *9*				σ(n,γ)=0.23 mb *4* (85Ra15).
1479.73 *15*	6168.87	0.058 *7*	E1(+M2)	+0.04 *5*		σ(n,γ)=0.263 mb *32* (85Ra15).
1484.06 *19*	(11416.94)	0.073 *11*				σ(n,γ)=0.33 mb *5* (85Ra15).
x1486.7 *8*		0.040 *11*				σ(n,γ)=0.18 mb *5* (85Ra15).
1525.39 *6*	6847.90	0.249 *25*				σ(n,γ)=1.13 mb *11* (85Ra15).
1544.41& *10*	6168.87	0.57& *5*	(E1)			σ(n,γ)=2.58 mb *24* (85Ra15).
	6421.35	0.57& *5*	E1(+M2)	0.00 *6*		σ(n,γ)=2.58 mb *24* (85Ra15).
1562.3 *5*	6251.23	0.18 *5*				σ(n,γ)=0.80 mb *20* (85Ra15).
1564.8 *5*	5679.932	0.20 *5*	(E1)			σ(n,γ)=0.91 mb *20* (85Ra15).
1572.57† *5*	4876.846	1.23† *14*	M1+E2	−0.09 *4*		σ(n,γ)=5.6 mb *6* (85Ra15).
1580.50 *6*	(11416.94)	0.145 *16*				σ(n,γ)=0.66 mb *7* (85Ra15).
1585.510 *20*	4889.758	0.55 *5*				σ(n,γ)=2.52 mb *23* (85Ra15).
1602.06 *15*	6478.773	0.095 *16*				σ(n,γ)=0.43 mb *7* (85Ra15).
1615.24 *10*	(11416.94)	0.50 *6*				σ(n,γ)=2.25 mb *27* (85Ra15).
1617.00 *12*	8727.64	0.43 *6*				σ(n,γ)=1.94 mb *25* (85Ra15).
1627.2 *10*	6251.68	0.042 *16*				σ(n,γ)=0.19 mb *7* (85Ra15).
1631.641 *25*	6954.22	0.63 *6*				σ(n,γ)=2.88 mb *27* (85Ra15).
1640.7 *10*	5755.882	0.037 *22*				σ(n,γ)=0.17 mb *10* (85Ra15).
1732.39 *11*	6421.35	0.097 *14*	E1(+M2)	0.0 *2*		σ(n,γ)=0.44 mb *6* (85Ra15).
1739.32 *9*	6428.13	0.106 *14*				σ(n,γ)=0.48 mb *6* (85Ra15).
1751.431 *29*	(11416.94)	0.32 *3*				σ(n,γ)=1.44 mb *14* (85Ra15).
1772.82 *4*	5847.53	0.31 *3*	M1			σ(n,γ)=1.40 mb *14* (85Ra15).
1788.794 *20*	3916.410	17.4 *18*				σ(n,γ)=79 mb *8* (85Ra15).
1795.28& *30*	8138.09	0.042& *11*				σ(n,γ)=0.19 mb *5* (85Ra15).
	9933.37	0.042& *11*				σ(n,γ)=0.19 mb *5* (85Ra15).
(1796.97)	6421.35	0.062 *7*				σ(n,γ)=0.28 mb *3*.
1818.96 *14*	(11416.94)	0.084 *14*				σ(n,γ)=0.38 mb *6* (85Ra15).
1840.52† *12*	9208.04	0.123† *20*				σ(n,γ)=0.56 mb *9* (85Ra15).
1854.28 *4*	6478.773	0.28 *3*				σ(n,γ)=1.28 mb *13* (85Ra15).
1871.04 *8*	(11416.94)	0.45 *5*				σ(n,γ)=2.04 mb *22* (85Ra15).
x1887.66 *4*		0.39 *4*				σ(n,γ)=1.78 mb *17* (85Ra15).
1922.92 *22*	5998.10	0.134 *25*	(M1)			σ(n,γ)=0.61 mb *11* (85Ra15).
1925.94 *17*	10311.54	0.062 *18*				σ(n,γ)=0.28 mb *8* (85Ra15).
1947.060 *20*	4074.669	6.4 *6*	M1+E2	+1.3 *+9−32*		σ(n,γ)=29.2 mb *26* (85Ra15).
1951.77 *19*	8294.40	0.117 *25*				σ(n,γ)=0.53 mb *11* (85Ra15).
1959.67 *17*	9208.04	0.194 *25*				σ(n,γ)=0.88 mb *11* (85Ra15).
x1980.15 *12*		0.141 *20*				σ(n,γ)=0.64 mb *9* (85Ra15).
x1984.2 *4*		0.11 *3*				σ(n,γ)=0.50 mb *14* (85Ra15).
1987.19 *3*	4114.815	1.43 *16*	M1+E2	−0.47 *10*		σ(n,γ)=6.5 mb *7* (85Ra15).
1998.3 *4*	11024.95	0.031 *11*				σ(n,γ)=0.14 mb *5* (85Ra15).
x2046.29 *5*		0.39 *4*				σ(n,γ)=1.78 mb *18* (85Ra15).
2053.94 *14*	6168.87	0.130 *20*				σ(n,γ)=0.59 mb *9* (85Ra15).
2076.89 *8*	5380.99	0.33 *4*				σ(n,γ)=1.48 mb *16* (85Ra15).
2127.499 *20*	2127.566	70 *7*	E2			σ(n,γ)=318 mb *29* (85Ra15).

Continued on next page (footnotes at end of table)

$^{34}_{16}S_{18}$

^{33}S(n,γ) E=thermal 85Ra15 (continued)

γ(^{34}S) (continued)

Eγ	E(level)	Iγ§@	Mult.#	δ#	I(γ+ce)@	Comments
2152.41 *23*	9933.37	0.037 *11*				σ(n,γ)=0.17 mb *5* (85Ra15).
2173.55 *21*	10311.54	0.035 *11*				σ(n,γ)=0.16 mb *5* (85Ra15).
2209.10 *6*	(11416.94)	0.189 *20*				σ(n,γ)=0.86 mb *9* (85Ra15).
2230.14† *14*	7552.70	0.176† *22*				σ(n,γ)=0.80 mb *10* (85Ra15).
2233.49 *4*	7110.46	1.10 *11*	(E1)			σ(n,γ)=5.0 mb *5* (85Ra15).
2258.430 *23*	(11416.94)	0.81 *9*				σ(n,γ)=3.7 mb *4* (85Ra15).
x2282.17 *4*		0.37 *4*				σ(n,γ)=1.70 mb *16* (85Ra15).
2290.26 *15*	8138.09	0.059 *11*				σ(n,γ)=0.27 mb *5* (85Ra15).
2326.2& *10*	8805.63	0.010& *10*				σ(n,γ)=0.05 mb *4* (85Ra15).
	9546.09	0.010& *10*				σ(n,γ)=0.05 mb *4* (85Ra15).
2328.8 *5*	7219.29	0.031 *9*	(E1)			σ(n,γ)=0.14 mb *4* (85Ra15).
2353.06 *21*	6428.13	0.051 *9*				σ(n,γ)=0.23 mb *4* (85Ra15).
2363.97 *8*	8615.74	0.46 *25*				σ(n,γ)=2.1 mb *11* (85Ra15).
(2371.12)	7248.05	0.0198				σ(n,γ)=0.09 mb.
2375.657 *20*	5679.932	5.7 *6*	(E1)			σ(n,γ)=26.0 mb *24* (85Ra15).
2390.82 *6*	(11416.94)	0.29 *3*				σ(n,γ)=1.33 mb *14* (85Ra15).
2404.04 *6*	6478.773	0.235 *25*				σ(n,γ)=1.07 mb *11* (85Ra15).
x2441.31 *4*		0.39 *4*				σ(n,γ)=1.75 mb *17* (85Ra15).
2451.557 *20*	5755.882	1.14 *11*				σ(n,γ)=5.2 mb *5* (85Ra15).
x2475.15 *4*		0.38 *4*				σ(n,γ)=1.71 mb *17* (85Ra15).
2490.6‡ *13*	7367.43	0.14‡ *4*				σ(n,γ)=0.62 mb *16* (85Ra15).
2496.726 *20*	4624.410	3.4 *3*	E1(+M2)	+0.02 *4*		σ(n,γ)=15.4 mb *14* (85Ra15).
2530.25 *10*	7219.29	0.112 *16*				σ(n,γ)=0.51 mb *7* (85Ra15).
2543.13& *10*	5847.53	2.1& *2*	E2			σ(n,γ)=9.6 mb *9* (85Ra15).
	(11416.94)	2.1& *2*				σ(n,γ)=9.6 mb *9* (85Ra15).
2558.82 *13*	7248.05	0.27 *3*				σ(n,γ)=1.24 mb *14* (85Ra15).
2561.36 *5*	4688.98	0.79 *9*	E2(+M3)	0.00 *1*		σ(n,γ)=3.6 mb *4* (85Ra15).
2611.7 *4*	(11416.94)	0.26 *7*				σ(n,γ)=1.2 mb *3* (85Ra15).
(2623.54)	7248.05	0.0242				σ(n,γ)=0.11 mb.
2689.50 *10*	(11416.94)	0.48 *6*				σ(n,γ)=2.16 mb *24* (85Ra15).
2714.50 *19*	(11416.94)	0.62 *11*				σ(n,γ)=2.8 mb *5* (85Ra15).
2749.24 *5*	4876.846	1.54 *16*	M1+E2	−0.11 *3*		σ(n,γ)=7.0 mb *7* (85Ra15).
2753.3‡ *13*	6828.83	0.20‡ *5*				σ(n,γ)=0.93 mb *23* (85Ra15).
2762.10 *8*	4889.758	0.66 *7*				σ(n,γ)=3.0 mb *3* (85Ra15).
2801.33 *5*	(11416.94)	2.22 *22*				σ(n,γ)=10.1 mb *10* (85Ra15).
x2810.3 *3*		0.19 *3*				σ(n,γ)=0.87 mb *13* (85Ra15).
2817.76& *25*	6121.56	0.19& *3*	M1+E2	−0.09 *4*		σ(n,γ)=0.84 mb *13* (85Ra15).
	9665.75	0.19& *3*				σ(n,γ)=0.84 mb *13* (85Ra15).
2839.3 *4*	6954.22	0.22 *4*				σ(n,γ)=1.00 mb *16* (85Ra15).
2843.7 *6*	10311.54	0.13 *3*				σ(n,γ)=0.59 mb *13* (85Ra15).
2864.56 *4*	6168.87	2.40 *25*	E1+M2	−0.23 *7*		σ(n,γ)=10.9 mb *11* (85Ra15).
2910.28 *5*	(11416.94)	2.20 *22*				σ(n,γ)=10.0 mb *10* (85Ra15).
2919.7 *5*	10650.13	0.095 *25*				σ(n,γ)=0.43 mb *11* (85Ra15).
2940.42 *31*	7629.912	0.23 *4*	(E1)			σ(n,γ)=1.05 mb *15* (85Ra15).
2945.8& *10*	8174.9	0.066& *20*				σ(n,γ)=0.30 mb *9* (85Ra15).
	8702.35	0.066& *20*				σ(n,γ)=0.30 mb *9* (85Ra15).
2989.9 *7*	9836.70	0.040 *20*				σ(n,γ)=0.18 mb *9* (85Ra15).
2995.8 *6*	7110.46	0.081 *22*	(E1)			σ(n,γ)=0.37 mb *10* (85Ra15).
3005.39 *5*	7629.912	2.20 *22*				σ(n,γ)=10.0 mb *10* (85Ra15).
3022.0 *10*	8702.35	0.035 *20*				σ(n,γ)=0.16 mb *9* (85Ra15).
3031.69 *8*	(11416.94)	1.01 *14*				σ(n,γ)=4.6 mb *6* (85Ra15).
3038.18 *32*	6342.53	0.28 *4*				σ(n,γ)=1.27 mb *17* (85Ra15).
x3051.83 *26*		0.14 *3*				σ(n,γ)=0.64 mb *12* (85Ra15).
3089.53 *26*	7164.47	0.123 *25*				σ(n,γ)=0.56 mb *11* (85Ra15).
3122.65 *15*	(11416.94)	0.59 *9*				σ(n,γ)=2.7 mb *4* (85Ra15).
x3149.29 *15*		0.20 *3*				σ(n,γ)=0.89 mb *12* (85Ra15).
3174.37 *5*	6478.773	2.31 *22*				σ(n,γ)=10.5 mb *10* (85Ra15).
3183.9† *7*	8506.78	0.026† *18*				σ(n,γ)=0.12 mb *8* (85Ra15).
3194.74 *5*	5322.52	1.63 *18*	E1+M2	−0.17 *6*		σ(n,γ)=7.4 mb *8* (85Ra15).
3211.69 *9*	(11416.94)	0.52 *5*				σ(n,γ)=2.36 mb *23* (85Ra15).
3231.89 *20*	(11416.94)	0.185 *25*				σ(n,γ)=0.84 mb *11*(85Ra15).
3241.9 *5*	(11416.94)	0.079 *16*				σ(n,γ)=0.36 mb *7* (85Ra15).
3253.21 *6*	5380.99	0.84 *9*				σ(n,γ)=3.8 mb *4* (85Ra15).

Continued on next page (footnotes at end of table)

^{33}S(n,γ) E=thermal 85Ra15 (continued)

γ(^{34}S) (continued)

Eγ	E(level)	Iγ§@	Mult.#	δ#	I(γ+ce)@	Comments
3278.79 *11*	(11416.94)	0.70 *9*				σ(n,γ)=3.2 mb *4* (85Ra15).
3304.031 *20*	3304.216	13.9 *14*	E2			σ(n,γ)=63 mb *6* (85Ra15).
3311.6 *5*	9158.72	0.136 *25*				σ(n,γ)=0.62 mb *11* (85Ra15).
3392.86 *24*	7467.74	0.35 *5*				σ(n,γ)=1.57 mb *19* (85Ra15).
3442.24 *25*	(11416.94)	0.22 *4*				σ(n,γ)=1.02 mb *16* (85Ra15).
3451.5 *9*	7367.43	0.077 *22*				σ(n,γ)=0.35 mb *10* (85Ra15).
3476.95 *18*	9598.42	0.156 *22*				σ(n,γ)=0.71 mb *10* (85Ra15).
3500.3 *5*	8727.64	0.106 *25*				σ(n,γ)=0.48 mb *11* (85Ra15).
3515.07 *11*	7629.912	0.31 *4*	(E1)			σ(n,γ)=1.43 mb *16* (85Ra15).
3552.08 *4*	5679.932	3.81 *4*				σ(n,γ)=17.34 mb *17* (85Ra15).
3581.2 *4*	8205.41	0.081 *16*				σ(n,γ)=0.37 mb *7* (85Ra15).
3628.10 *4*	5755.882	3.9 *4*				σ(n,γ)=17.6 mb *16* (85Ra15).
3635.83 *8*	(11416.94)	1.14 *14*				σ(n,γ)=5.2 mb *6* (85Ra15).
3644.8 *8*	9026.31	0.106 *22*				σ(n,γ)=0.48 mb *10* (85Ra15).
3649.88 *12*	6954.22	0.68 *7*				σ(n,γ)=3.11 mb *31* (85Ra15).
3664.8 *4*	10092.21	0.103 *22*				σ(n,γ)=0.47 mb *10* (85Ra15).
3719.68 *16*	5847.53	0.42 *5*	E2			σ(n,γ)=1.91 mb *20* (85Ra15).
3738.69 *17*	8615.74	0.26 *4*				σ(n,γ)=1.18 mb *17* (85Ra15).
3787.096 *20*	(11416.94)	5.8 *6*				σ(n,γ)=26.5 mb *25* (85Ra15).
3812.0 *5*	8702.35	0.055 *14*				σ(n,γ)=0.25 mb *6* (85Ra15).
3864.25 *11*	(11416.94)	0.37 *4*				σ(n,γ)=1.68 mb *17* 985ra15).
3870.51 *31*	5998.10	0.123 *18*				σ(n,γ)=0.56 mb *8* (85Ra15).
(3916.17)	3916.410		E0		0.0066 *11*	σ(n,γ)=0.030 mb *5*.
3949.27 *12*	(11416.94)	0.34 *4*				σ(n,γ)=1.54 mb *17* (85Ra15).
3990.7 *7*	8615.74	0.064 *16*				σ(n,γ)=0.29 mb *7* (85Ra15).
3994.8 *8*	6121.56	0.055 *16*				σ(n,γ)=0.25 mb *7* (85Ra15).
4040.63 *29*	6168.87	0.119 *18*	E1+M2	−0.43 *16*		σ(n,γ)=0.54 mb *8* (85Ra15).
4049.68 *15*	(11416.94)	0.26 *3*				σ(n,γ)=1.17mb 13 (85Ra15).
4074.418 *20*	4074.669	6.9 *7*	M1			σ(n,γ)=31.3 mb *29* (85Ra15).
4114.52 *4*	4114.815	1.89 *20*	E2			σ(n,γ)=8.6 mb *9* (85Ra15).
4197.69 *9*	(11416.94)	0.66 *9*				σ(n,γ)=3.0 mb *4* (85Ra15).
4248.28 *21*	7552.70	0.35 *4*				σ(n,γ)=1.59 mb *18* (85Ra15).
4252.38 *22*	(11416.94)	0.27 *4*				σ(n,γ)=1.23 mb *15* (85Ra15).
4306.44 *6*	(11416.94)	1.83 *18*				σ(n,γ)=8.3 mb *8* (85Ra15).
4325.397 *30*	7629.912	2.8 *3*	(E1)			σ(n,γ)=12.7 mb *12* (85Ra15).
4350.85 *9*	6478.773	1.36 *16*				σ(n,γ)=6.2 mb *7* (85Ra15).
4391.77 *29*	8506.78	0.097 *20*	(E1)			σ(n,γ)=0.44 mb *9* (85Ra15).
(4426.27)	7730.80					
4462.44 *20*	(11416.94)	1.74 *18*				σ(n,γ)=7.9 mb *8* (85Ra15).
4499.7 *10*	10179.60	0.051 *16*				σ(n,γ)=0.23 mb *7* (85Ra15).
4532.6 *7*	10212.16	0.051 *16*				σ(n,γ)=0.23 mb *7* (85Ra15).
4540.68 *15*	8615.74	0.37 *5*				σ(n,γ)=1.70 mb *20* (85Ra15).
4568.9 *4*	(11416.94)	0.066 *14*				σ(n,γ)=0.30 mb *6* (85Ra15).
4588.37 *26*	(11416.94)	0.130 *22*				σ(n,γ)=0.59 mb *10* (85Ra15).
4624.2 *5*	4624.410	0.046 *11*	E3			σ(n,γ)=0.21 mb *5* (85Ra15).
4670.1 *6*	7974.72	0.024 *14*				σ(n,γ)=0.11 mb *6* (85Ra15).
4731.37 *10*	(11416.94)	0.35 *4*				σ(n,γ)=1.58 mb *10* (85Ra15).
4758.79 *27*	8874.02	0.101 *18*				σ(n,γ)=0.46 mb *8* (85Ra15).
4799.11 *28*	8874.02	0.114 *18*				σ(n,γ)=0.52 mb *8* (85Ra15).
4826.0 *5*	6954.22	0.024 *11*				σ(n,γ)=0.11 mb *5* (85Ra15).
4889.30 *8*	4889.758	0.59 *6*	E2			σ(n,γ)=2.68 mb *26* (85Ra15).
4903.4† *5*	11024.95	0.062† *18*				σ(n,γ)=0.28 mb *8* (85Ra15).
4938.06 *3*	(11416.94)	4.9 *5*				σ(n,γ)=22.2 mb *21* (85Ra15).
4982.44 *20*	7110.46	0.29 *3*	E1+M2	+0.27 *17*		σ(n,γ)=1.31 mb *14* (85Ra15).
4988.6 *4*	10311.54	0.139 *20*				σ(n,γ)=0.63 mb *9* (85Ra15).
5036.4 *7*	7164.47	0.055 *14*				σ(n,γ)=0.25 mb *6* (85Ra15).
5043.3 *4*	9158.72	0.35 *6*				σ(n,γ)=1.59 mb *26* (85Ra15).
5074.79 *25*	(11416.94)	0.092 *18*				σ(n,γ)=0.42 mb *8* (85Ra15).
5084.2 *5*	9158.72	0.031 *11*				σ(n,γ)=0.14 mb *5* (85Ra15).
(5120.07)	7248.05	0.0792				σ(n,γ)=0.36 mb.
5202.06 *6*	8506.78	0.66 *7*	(E1)			σ(n,γ)=3.00 mb *29* (85Ra15).
5239.8 *4*	7367.43	0.143 *20*				σ(n,γ)=0.65 mb *9* (85Ra15).
5247.94 *4*	(11416.94)	2.60 *25*				σ(n,γ)=11.8 mb *11* (85Ra15).

Continued on next page (footnotes at end of table)

$^{34}_{16}S_{18}$

^{33}S(n,γ) E=thermal 85Ra15 (continued)

γ(^{34}S) (continued)

Eγ	E(level)	Iγ[§@]	Mult.[#]	Comments
5268.9[&] *6*	10650.13	0.059[&] *15*		σ(n,γ)=0.27 mb *7* (85Ra15).
	11024.95	0.059[&] *15*		σ(n,γ)=0.27 mb *7* (85Ra15).
5294.94 *24*	(11416.94)	0.092 *18*		σ(n,γ)=0.42 mb *8* (85Ra15).
5311.10 *15*	8615.74	0.176 *22*		σ(n,γ)=0.80 mb *10* (85Ra15).
5380.59 *9*	5380.99	0.43 *5*	M1	σ(n,γ)=1.97 mb *20* (85Ra15).
5501.4 *5*	8805.63	0.101 *20*		σ(n,γ)=0.46 mb *9* (85Ra15).
5569.30 *5*	(11416.94)	1.23 *14*		σ(n,γ)=5.6 mb *6* (85Ra15).
5602.78 *15*	7730.80	0.25 *3*		σ(n,γ)=1.15 mb *14* (85Ra15).
5660.78 *6*	(11416.94)	4.0 *4*		σ(n,γ)=18.4 mb *18* (85Ra15).
5736.76 *4*	(11416.94)	9.5 *9*		σ(n,γ)=43 mb *4* (85Ra15).
5755.5 *5*	5755.882	0.112 *18*	E1	σ(n,γ)=0.51 mb *8* (85Ra15).
5847.4 *5*	7974.72	0.055 *14*		σ(n,γ)=0.25 mb *6* (85Ra15).
5884.6 *6*	9801.89	0.059 *14*		σ(n,γ)=0.27 mb *6* (85Ra15).
5997.30 *31*	5998.10	0.075 *14*	E2	σ(n,γ)=0.34 mb *6* (85Ra15).
6010.3 *3*	8138.09	0.110 *18*		σ(n,γ)=0.50 mb *8* (85Ra15).
6035.68 *7*	(11416.94)	0.97 *11*		σ(n,γ)=4.4 mb *5* (85Ra15).
(6057.31)	8185.46			
6077.27 *12*	8205.41	0.26 *3*		σ(n,γ)=1.19 mb *13* (85Ra15).
6094.4 *4*	(11416.94)	0.046 *11*		σ(n,γ)=0.21 mb *5* (85Ra15).
6152.1 *5*	10840.62	0.040 *11*		σ(n,γ)=0.18 mb *5* (85Ra15).
6166.24 *13*	8294.40	0.34 *4*		σ(n,γ)=1.55 mb *17* (85Ra15).
6188.45 *6*	(11416.94)	1.91 *20*		σ(n,γ)=8.7 mb *9* (85Ra15).
6236.3 *11*	10311.54	0.042 *11*		σ(n,γ)=0.19 mb *5* (85Ra15).
6241.0 *5*	9546.09	0.099 *16*		σ(n,γ)=0.45 mb *7* (85Ra15).
6341.58 *32*	6342.53	0.099 *18*	E1	σ(n,γ)=0.45 mb *8* (85Ra15).
6487.48 *6*	8615.74	0.79 *9*		σ(n,γ)=3.6 mb *4* (85Ra15).
6496.62 *23*	9801.89	0.123 *16*		σ(n,γ)=0.56 mb *7* (85Ra15).
6526.84 *6*	(11416.94)	1.21 *14*		σ(n,γ)=5.5 mb *6* (85Ra15).
6539.66 *16*	(11416.94)	0.22 *3*		σ(n,γ)=0.99 mb *12* (85Ra15).
6573.6 *4*	8702.35	0.24 *5*		σ(n,γ)=1.09 mb *19* (85Ra15).
6600.1 *7*	8727.64	0.051 *11*		σ(n,γ)=0.23 mb *5* (85Ra15).
6727.5 *9*	(11416.94)	0.015 *9*		σ(n,γ)=0.07 mb *4* (85Ra15).
6745.64 *16*	8874.02	0.60 *7*		σ(n,γ)=2.71 mb *30* (85Ra15).
6792.10 *3*	(11416.94)	5.3 *5*		σ(n,γ)=24.2 mb *23* (85Ra15).
(6828)	6828.83		E2	
6846.37 *32*	6847.90	0.123 *16*		σ(n,γ)=0.56 mb *7* (85Ra15).
7218.48 *13*	7219.29	0.60 *7*		σ(n,γ)=2.71 mb *28* (85Ra15).
7302.2 *8*	(11416.94)	0.062 *11*		σ(n,γ)=0.28 mb *5* (85Ra15).
7341.67 *6*	(11416.94)	8.0 *7*		σ(n,γ)=36.5 mb *34* (85Ra15).
7499.90 *5*	(11416.94)	13.6 *14*		σ(n,γ)=62 mb *6* (85Ra15).
7536.2 *7*	9665.75	0.097 *22*		σ(n,γ)=0.44 mb *10* (85Ra15).
7675.0 *8*	9801.89	0.035 *9*		σ(n,γ)=0.16 mb *4* (85Ra15).
7708.32 *30*	9836.70	0.097 *16*		σ(n,γ)=0.44 mb *7* (85Ra15).
7780.22 *10*	7781.22	0.84 *11*	E1	σ(n,γ)=3.8 mb *5* (85Ra15).
7973.45 *25*	7974.72	0.092 *14*		σ(n,γ)=0.42 mb *6* (85Ra15).
8036.6 *7*	8036.31	0.040 *9*		σ(n,γ)=0.18 mb *4* (85Ra15).
8051.1 *6*	10179.60	0.057 *11*		σ(n,γ)=0.26 mb *5* (85Ra15).
8083.49 *31*	10212.16	0.103 *16*		σ(n,γ)=0.47 mb *7* (85Ra15).
8111.99 *9*	(11416.94)	1.34 *16*		σ(n,γ)=6.1 mb *7* (85Ra15).
8136.98 *17*	8138.09	0.31 *4*	E1	σ(n,γ)=1.40 mb *16* (85Ra15).
8173.8 *9*	8174.9	0.035 *7*		σ(n,γ)=0.157 mb *31* (85Ra15).
8184.70 *24*	8185.46	0.141 *16*		σ(n,γ)=0.64 mb *7* (85Ra15).
8384.28 *9*	8385.41	0.75 *8*	E1	σ(n,γ)=3.43 mb *33* (85Ra15).
8505.68 *10*	8506.78	1.03 *11*	E1	σ(n,γ)=4.7 mb *5* (85Ra15).
8726.78 *24*	8727.64	0.097 *14*		σ(n,γ)=0.44 mb *6* (85Ra15).
8804.4 *4*	8805.63	0.053 *9*		σ(n,γ)=0.24 mb *4* (85Ra15).
9024.95 *17*	9026.31	0.176 *20*		σ(n,γ)=0.80 mb *9* (85Ra15).
9206.65 *26*	9208.04	0.077 *11*		σ(n,γ)=0.35 mb *5* (85Ra15).
9288.28 *16*	(11416.94)	0.24 *3*		σ(n,γ)=1.10 mb *12* (85Ra15).
9544.83 *28*	9546.09	0.084 *11*		σ(n,γ)=0.38 mb *5* (85Ra15).
9932.1 *6*	9933.37	0.018 *5*	E1	σ(n,γ)=0.082 mb *19* (85Ra15).
11415.17 *11*	(11416.94)	1.56 *16*		σ(n,γ)=7.1 mb *7* (85Ra15).

Footnotes continued on next page

$^{34}_{16}S_{18}$

$^{33}S(n,\gamma)$ E=thermal 85Ra15 (continued)

$\gamma(^{34}S)$ (continued)

† After corrections due to a γ–ray of similar energy in $^{34}S(n,\gamma)^{35}S$ reaction.

‡ After corrections due to a γ–ray of similar energy in $^{32}S(n,\gamma)^{33}S$ reaction.

§ Absolute intensities per 100 neutron captures. For γ–ray cross section in mb (85Ra15), multiply by 4.54545 per 100 neutron captures. From the difference between the intensities feeding the ground state and emerging from the capturing state, it is noted that ≈75 mb of intensity (17% of the total capture cross section) is contained in numerous unobserved (and fewer unplaced or misplaced) primary transitions. Whenever either the intensity in or intensuty out exceeds 10 mb, the intensity balance is satisfactory (<20% imbalance) for all levels, except the 4115–keV, 2+ state. This agreement is not contrived but emerges naturally from a skeleton level scheme eschewing the weaker transitions.

From adopted gammas, except as noted.

@ For intensity per 100 neutron captures, multiply by 1.

& Multiply placed; undivided intensity given.

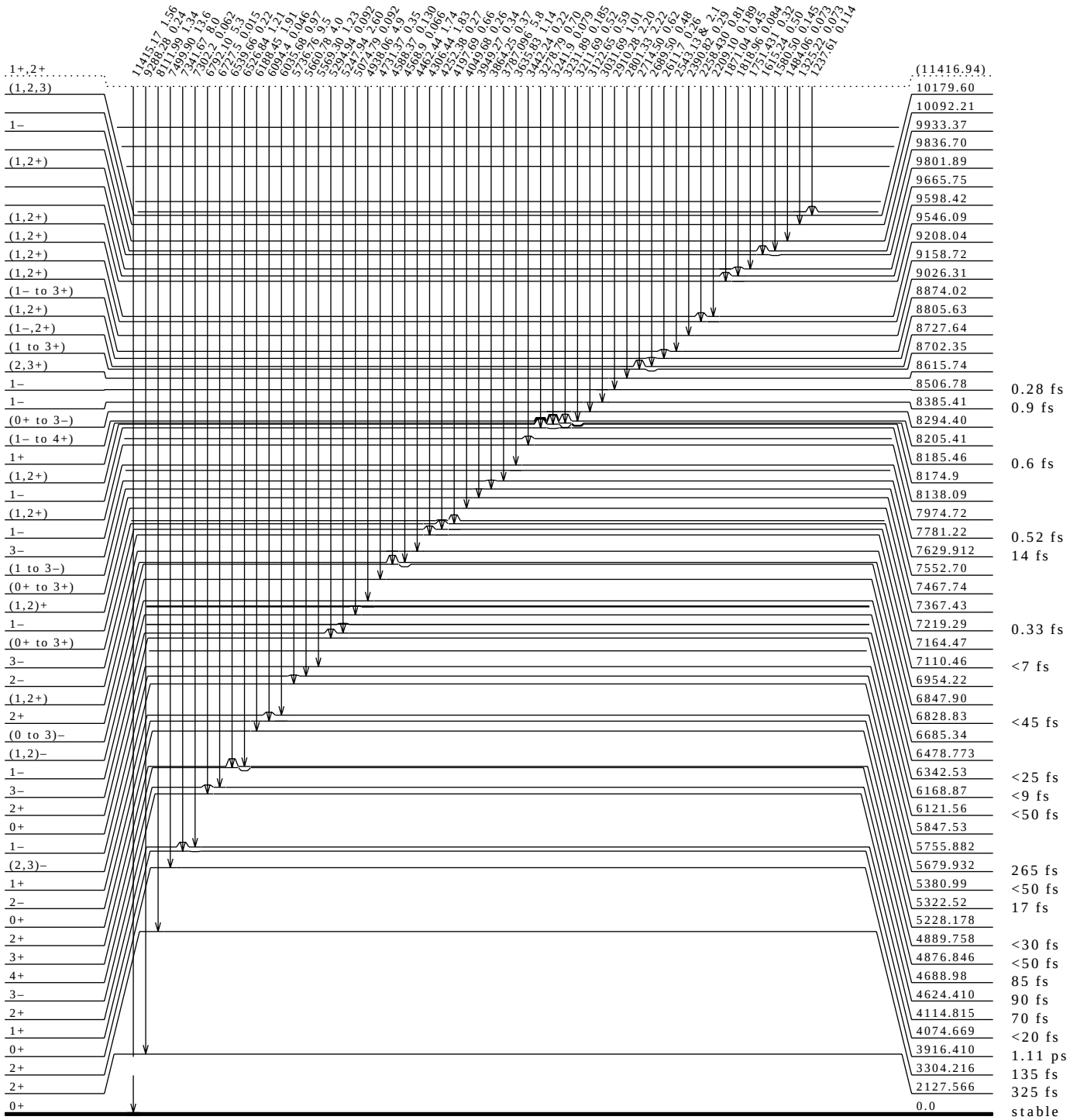
x γ ray not placed in level scheme.

$^{34}_{16}S_{18}$

$^{33}S(n,\gamma)$ E=thermal 85Ra15 (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



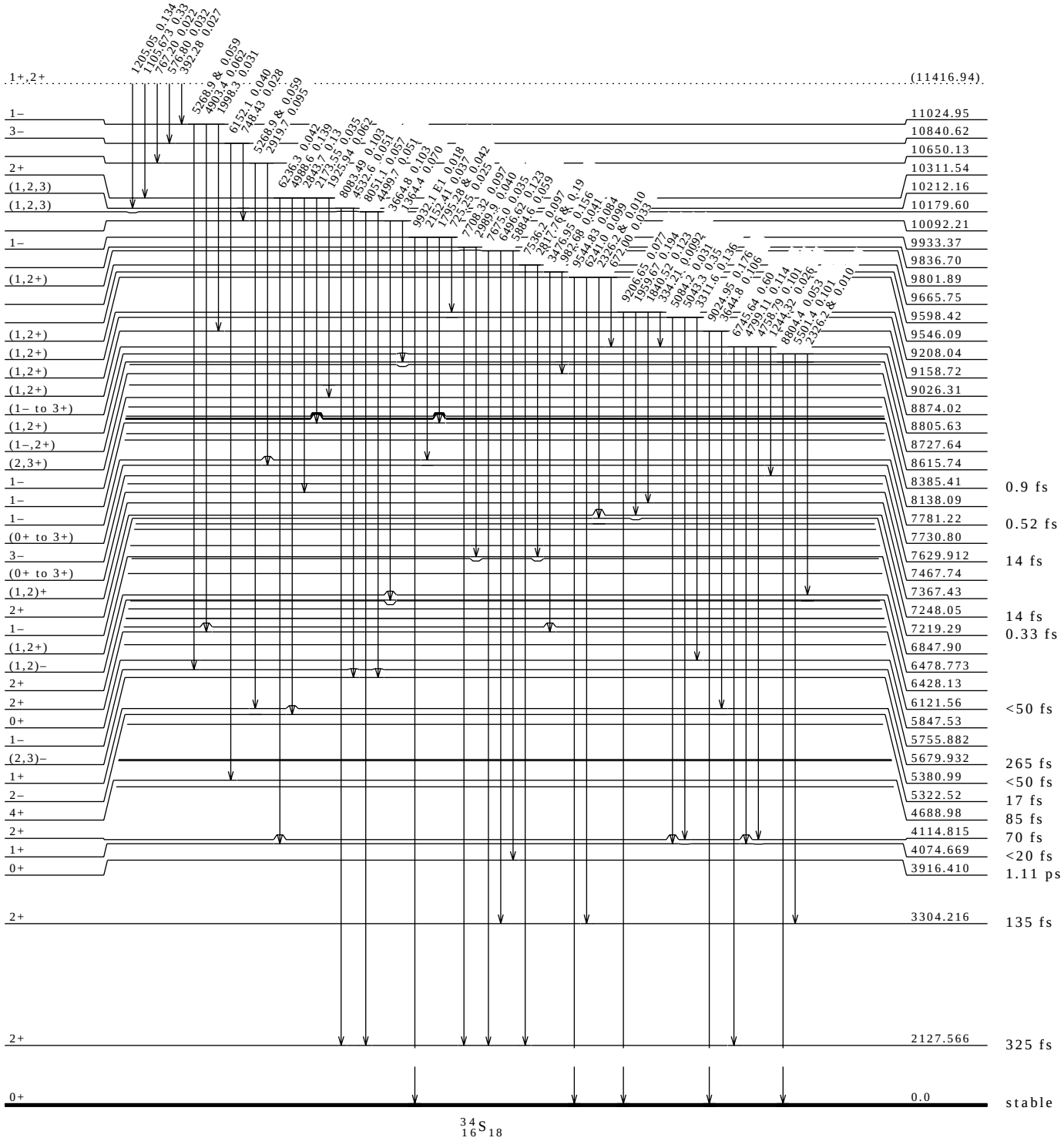
$^{34}_{16}S_{18}$

$^{34}_{16}S_{18}$

^{33}S(n,γ) E=thermal 85Ra15 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

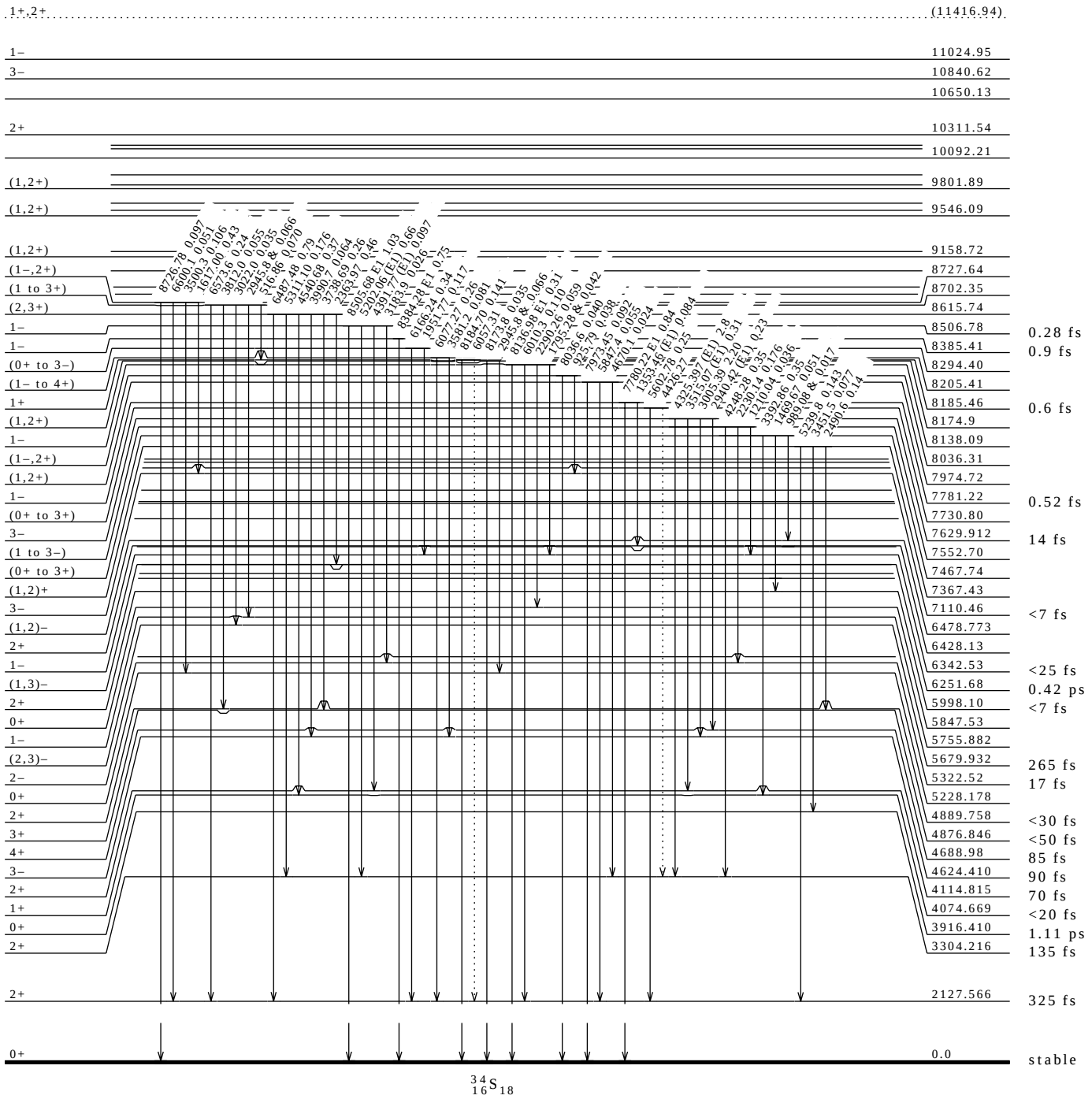


$^{34}_{16}S_{18}$

$^{33}S(n,\gamma)$ E=thermal 85Ra15 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

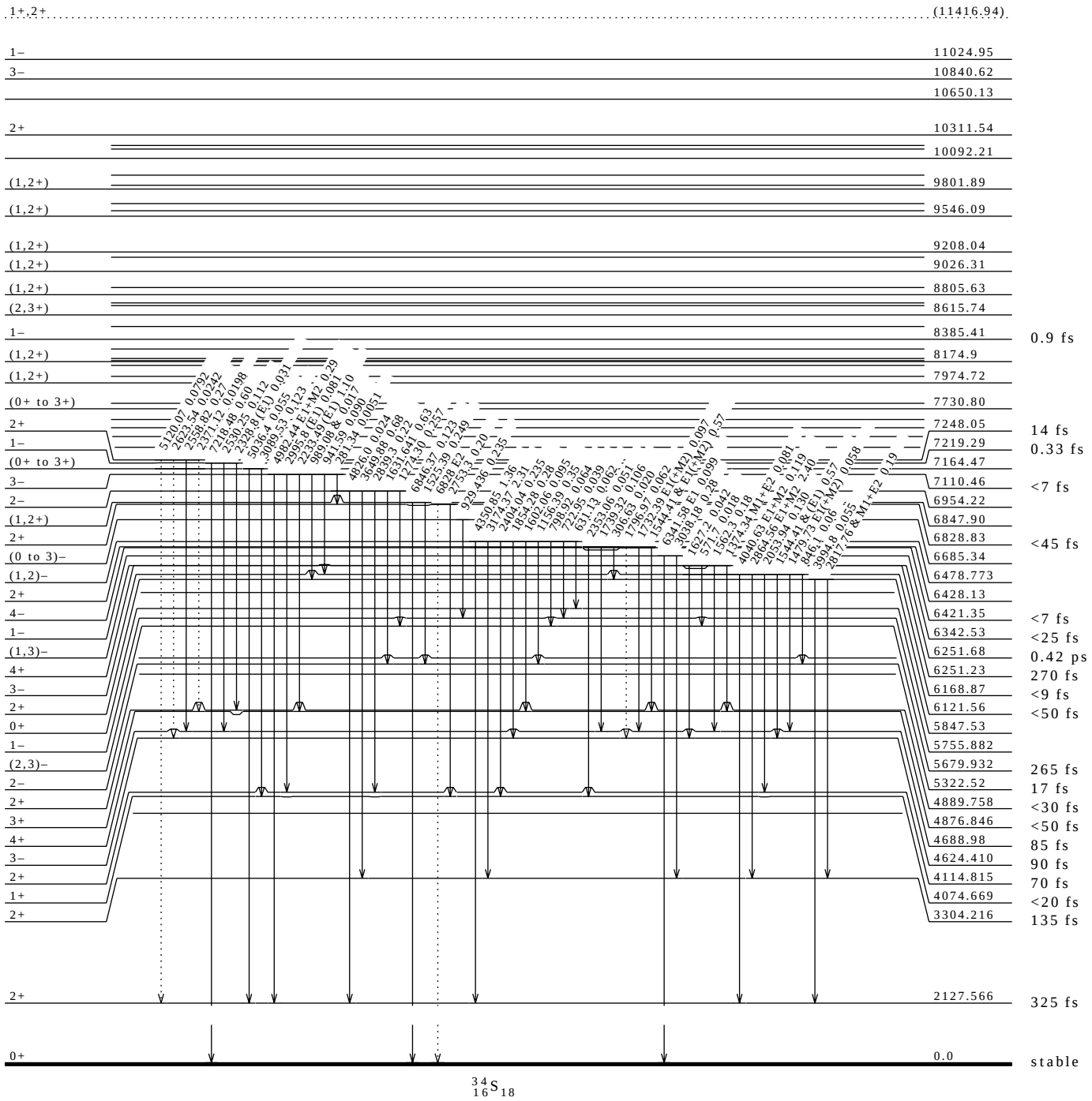


$^{34}_{16}S_{18}$

^{33}S(n,γ) E=thermal 85Ra15 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

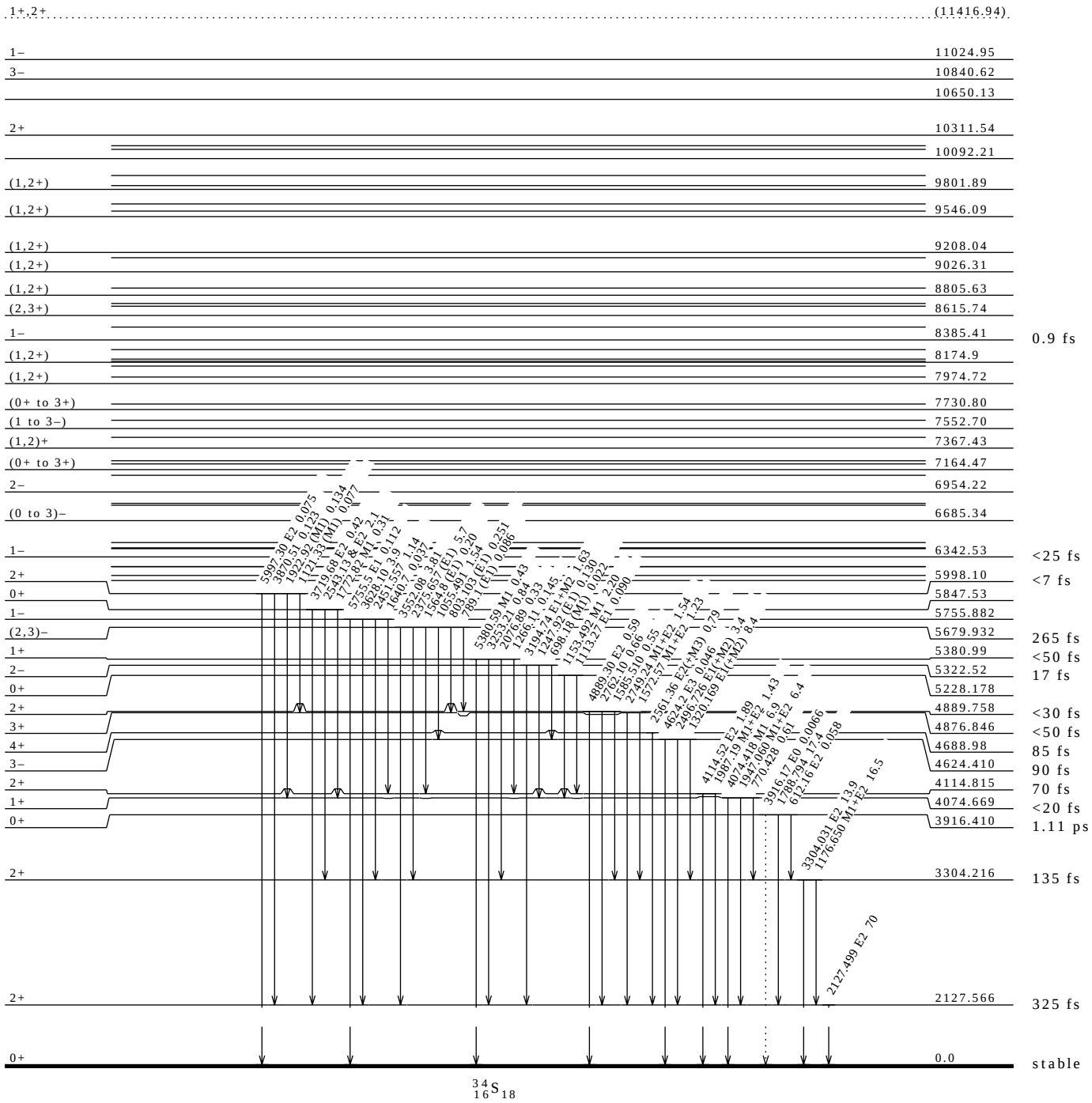


$^{34}_{16}S_{18}$

$^{33}S(n,\gamma)$ E=thermal 85Ra15 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



$^{34}_{16}S_{18}$

$^{35}_{16}S_{19}$

^{34}S(n,γ) E=thermal 85Ra15,85Ke08

Target Jπ=0+.

85Ra15: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=6986.089 keV *14*.

85Ke08: measured Eγ, Iγ with a Ge(Li)–NaI(Tl). Deduced neutron separation energy S(n)=6985.84 keV *5*.

Other measured S(n)=6986.089 keV *44* (83Ra04).

Evaluated S(n)=6985.84 keV *4* (95Au04).

Measured thermal–neutron capture cross section, σ(n,γ)=518 mb *14* (85Ra15).

^{35}S Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	3/2+	87.51 d *12*	%β⁻=100.
1572.373 *6*	1/2+	2.3 ps *3*	
1991.28 *5*	7/2+	1.02 ns *5*	
2347.781 *7*	3/2−	0.89 ps *12*	
2716.991 *20*	5/2+	70 fs *25*	
2938.64 *5*	3/2+		
3558.074 *24*	(3/2−,5/2)		
3801.955 *14*	3/2−	25 fs *18*	
4105.6 *7*	(1/2,3/2,5/2)+		
4189.256 *15*	1/2−	<55 fs	
4477.60 *7*	(1/2,32,5/2)+		
4903.355 *13*	1/2−		
4963.073 *15*	3/2−		
5752.5 *8*	(1/2 to 7/2)+		
6018.8 *6*	(1/2 to 5/2+)		
6078.471 *20*	(1/2,3/2)−		
6293.92 *6*	(1/2 to 5/2+)		
6354.88 *23*	(1/2 to 5/2+)		
6419.9 *11*			
6629.42 *9*	(1/2 to 5/2+)		
6761.0 *12*			
(6985.84 *4*)	1/2+		E(level): from evaluated S(n) (95Au04). Jπ: from s–wave neutron capture. Observed deexcitation intensity is 45.7% of g.s. feeding.

† From adopted levels, except as noted.

‡ From Eγ's using least–squares fit to data, except as noted.

γ(^{35}S)

All data are from 85Ra15, except as noted.

Iγ normalization: renormalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ§@	Mult.#	δ#	Comments
356.66& *9*	2347.781	0.037& *4*			σ(n,γ)=0.110 mb *12* (85Ra15).
	(6985.84)	0.037& *4*			σ(n,γ)=0.110 mb *12* (85Ra15).
368.5 *4*	2716.991	0.020 *7*			σ(n,γ)=0.06 mb *2* (85Ra15).
619.23 *19*	3558.074	0.041 *8*			σ(n,γ)=0.122 mb *22* (85Ra15).
631.32& *24*	4189.256	0.060& *9*			σ(n,γ)=0.175 mb *25* (85Ra15).
	(6985.84)	0.060& *9*			σ(n,γ)=0.175 mb *25* (85Ra15).
x663.41 *7*		0.090 *11*			σ(n,γ)=0.266 mb *30* (85Ra15).
692.16 *5*	(6985.84)	0.132 *17*			σ(n,γ)=0.39 mb *5* (85Ra15).
775.398 *6*	2347.781	15.6 *17*	(E1)		σ(n,γ)=46 mb *5* (85Ra15).
x803.81 *9*		0.092 *14*			σ(n,γ)=0.27 mb *4* (85Ra15).
863.28 *28*	3801.955	0.034 *11*	(E1)		σ(n,γ)=0.10 mb *3* (85Ra15).
907.607† *14*	(6985.84)	0.61† *11*			σ(n,γ)=1.79 mb *30* (85Ra15).
1084.79 *15*	3801.955	0.054 *11*	(E1)		σ(n,γ)=0.16 mb *3* (85Ra15).
1101.92 *31*	4903.355	0.033 *8*			σ(n,γ)=0.096 mb *23* (85Ra15).
1144.591 *20*	2716.991	0.55 *6*			σ(n,γ)=1.63 mb *16* (85Ra15).
1161.05 *20*	4963.073	0.055 *9*			σ(n,γ)=0.161 mb *24* (85Ra15).
(1166.9)	4105.6	0.0068			σ(n,γ)=0.02 mb.
1210.28 *4*	3558.074	0.25 *3*			σ(n,γ)=0.74 mb *8* (85Ra15).
1250.61 *5*	4189.256	0.214 *24*	(E1)		σ(n,γ)=0.63 mb *7* (85Ra15).
x1381.67 *24*		0.024 *9*			σ(n,γ)=0.070 mb *24* (85Ra15).

Continued on next page (footnotes at end of table)

$^{35}_{16}S_{19}$

^{34}S(n,γ) E=thermal 85Ra15,85Ke08 (continued)

γ(^{35}S) (continued)

Eγ	E(level)	Iγ§@	Mult.#	δ#	Comments
1404.967 *24*	4963.073	0.60 *6*			σ(n,γ)=1.76 mb *17* (85Ra15).
1454.09† *4*	3801.955	0.45† *11*			σ(n,γ)=1.33 mb *32* (85Ra15).
1566.7 *3*	3558.074	0.47 *9*			σ(n,γ)=1.38 mb *25* (85Ra15).
1572.333 *7*	1572.373	35 *4*			σ(n,γ)=103 mb *10* (85Ra15).
1760.55 *11*	4477.60	0.146 *21*			σ(n,γ)=0.43 mb *6* (85Ra15).
1841.426 *15*	4189.256	2.14 *21*			σ(n,γ)=6.3 mb *6* (85Ra15).
1964.8† *2*	4903.355	0.37† *11*			σ(n,γ)=1.1 mb *3* (85Ra15).
1991.27 *5*	1991.28	0.54 *6*	M2+E3	−0.19 *8*	σ(n,γ)=1.59 mb *16* (85Ra15).
2022.954 *9*	(6985.84)	11.4 *11*			Iγ: 11 *1* (85Ke08).
					σ(n,γ)=33.6 mb *30* (85Ra15).
2082.681 *12*	(6985.84)	15.6 *17*			Iγ: 17 *2* (85Ke08).
					σ(n,γ)=46 mb *5* (85Ra15).
(2129.75)	4477.60	0.146			σ(n,γ)=0.43 mb.
2229.510 *16*	3801.955	2.8 *3*	(E1)		σ(n,γ)=8.4 mb *8* (85Ra15).
2347.701 *11*	2347.781	50 *5*	E1(+M2)	≈0.0	Iγ: 49 *4* (85ke8).
					σ(n,γ)=148 mb *13* (85Ra15).
2508.39 *8*	(6985.84)	0.38 *4*			σ(n,γ)=1.11 mb *12* (85Ra15).
2555.492 *14*	4903.355	3.1 *3*			σ(n,γ)=9.1 mb *9* (85Ra15).
2615.2‡ *2*	4963.073	1.08‡ *11*			σ(n,γ)=3.2 mb *3* (85Ra15).
2616.8† *3*	4189.256	0.24† *7*	E1		σ(n,γ)=0.7 mb *2* (85Ra15).
2716.99 *16*	2716.991	0.30 *5*			σ(n,γ)=0.89 mb *13* (85Ra15).
2796.73 *4*	(6985.84)	5.4 *5*			Iγ: 4.3 *4* (85Ke08).
					σ(n,γ)=15.9 mb *15* (85Ra15).
2905.1 *4*	4477.60	0.14 *4*			σ(n,γ)=0.41 mb *11* (85Ra15).
2938.58 *11*	2938.64	0.89 *10*			σ(n,γ)=2.62 mb *27* (85Ra15).
2972.0 *4*	4963.073	0.18 *6*			σ(n,γ)=0.54 mb *17* (85Ra15).
3139.9 *5*	6078.471	0.078 *24*			σ(n,γ)=0.23 mb *7* (85Ra15).
3183.94 *4*	(6985.84)	6.2 *6*			Iγ: 5.7 *6* (85Ke08).
					σ(n,γ)=18.2 mb *17* (85Ra15).
3330.80 *4*	4903.355	7.4 *8*	E1		Iγ: 7.7 *8* (85Ke08).
					σ(n,γ)=21.8 mb *21* (85Ra15).
3390.55 *5*	4963.073	5.5 *5*			Iγ: 5.7 *6* (85Ke08).
					σ(n,γ)=16.2 mb *15* (85Ra15).
3558.1 *5*	3558.074	0.085 *17*			σ(n,γ)=0.25 mb *5* (85Ra15).
3801.74 *3*	3801.955	3.1 *3*	(E1)		Iγ: 2.3 *2* (85Ke08).
					σ(n,γ)=9.1 mb *9* (85Ra15).
4105.3 *8*	4105.6	0.047 *17*			σ(n,γ)=0.14 mb *5* (85Ra15).
4188.96 *4*	4189.256	2.7 *3*	(E1)		Iγ: 24 *2* (85Ke08).
					σ(n,γ)=8.0 mb *8* (85Ra15).
4268.65 *14*	(6985.84)	0.34 *4*			σ(n,γ)=1.00 mb *12* (85Ra15).
4637.91 *4*	(6985.84)	5.5 *5*			Iγ: 59 *5* (85Ke08).
					σ(n,γ)=16.3 mb *15* (85Ra15).
4902.96 *4*	4903.355	3.7 *4*			Iγ: 4.3 *4* (85Ke08).
					σ(n,γ)=11.0 mb *11* (85Ra15).
4962.63 *5*	4963.073	2.9 *3*			Iγ: 2.9 *3* (85Ke08).
					σ(n,γ)=8.6 mb *8* (85Ra15).
5752.0 *8*	5752.5	0.018 *5*			σ(n,γ)=0.052 mb *15* (85Ra15).
6018.2 *6*	6018.8	0.020 *7*			σ(n,γ)=0.06 mb *2* (85Ra15).
6077.87 *11*	6078.471	0.36 *4*			σ(n,γ)=1.06 mb *11* (85Ra15).
6293.2 *4*	6293.92	0.064 *14*			σ(n,γ)=0.19 mb *4* (85Ra15).
6355.0 *6*	6354.88	0.046 *7*			σ(n,γ)=0.136 mb *20* (85Ra15).
6419.3 *11*	6419.9	0.016 *5*			σ(n,γ)=0.048 mb *15* (85Ra15).
6628.5 *6*	6629.42	0.030 *6*			σ(n,γ)=0.089 mb *16* (85Ra15).
6760.3 *12*	6761.0	0.019 *8*			σ(n,γ)=0.056 mb *22* (85Ra15).
6985.7 *10*	(6985.84)	0.036 *8*			σ(n,γ)=0.106 mb *23* (85Ra15).

† After corrections due to a γ–ray of similar energy in the ^{32}S(n,γ)^{33}S recation.

‡ Peak observed at 2615.49 keV *4* with intensity 3.94 *4* was reanalyzed as a doublet.

§ Absolute intensities per 100 neutron captures. For γ–ray cross section in mb (85Ra15), multiply by 2.9412 per 100 neutron captures.

From adopted gammas, except as noted.

@ For intensity per 100 neutron captures, multiply by 1.

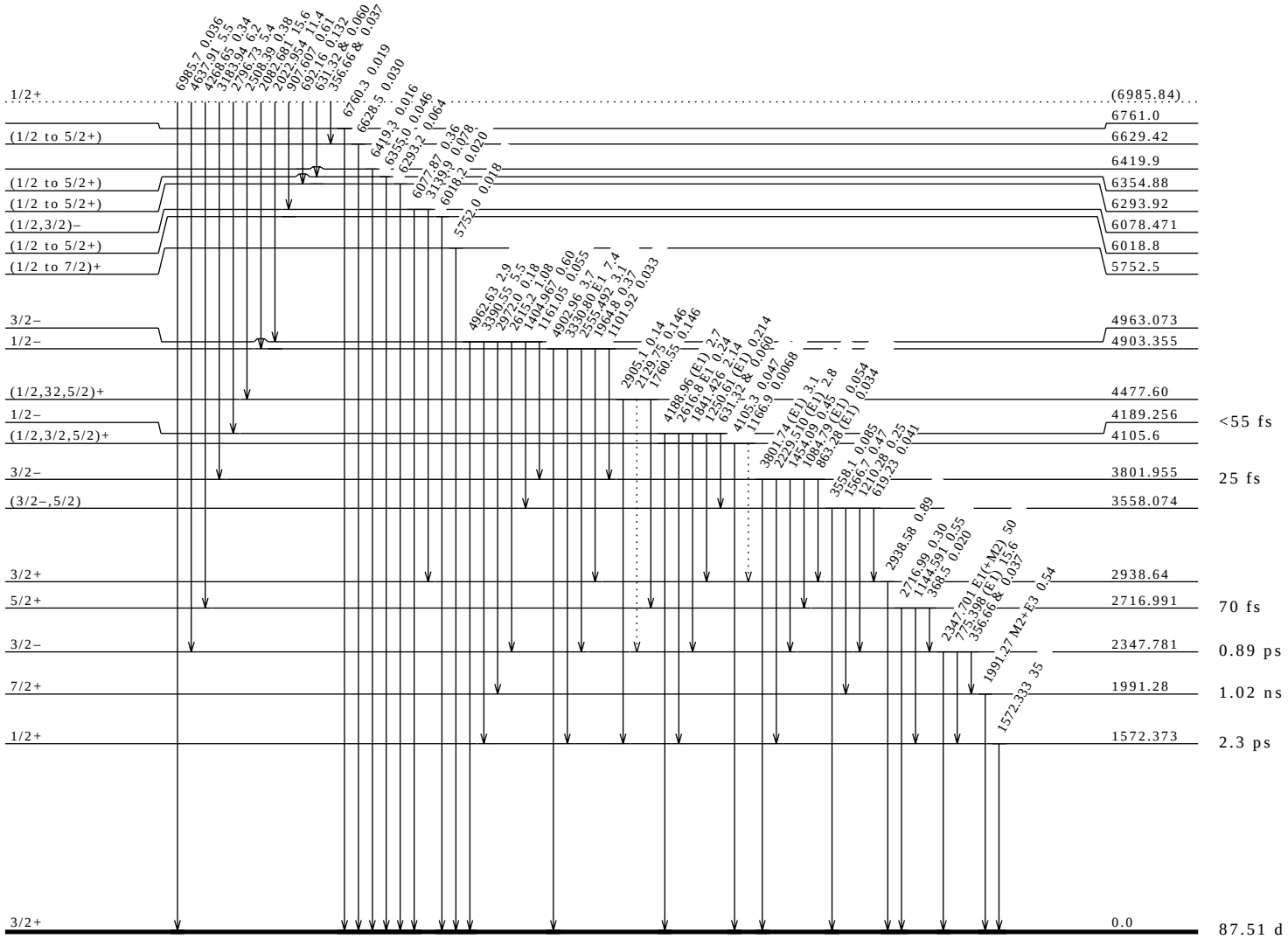
& Multiply placed; undivided intensity given.

x γ ray not placed in level scheme.

$^{34}S(n,\gamma)$ E=thermal 85Ra15,85Ke08 (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16

Target Jπ=3/2+.

82Kr12: measured Eγ, Iγ with curved crystal spectrometers GAMS1 and GAMS2/3 and Ge(Li)–NaI(Tl) in Compton–suppressed mode and pair spectrometer mode. Deduced neutron separation energy S(n)=8579.68 keV *9*.

81Ke02: measured Eγ, Iγ with a Ge(Li)–NaI(Tl) pair spectrometer. Deduced neutron separation energy S(n)=8579.83 keV *2*.

96Co16: measured Eγ, Iγ with HpGe detector.

Evaluated S(n)=8579.70 keV *7* (95Au04).

^{36}Cl Levels

E(level)‡	Jπ†	$T_{1/2}$†	Comments
0.0	2+	3.01×10^5 y *2*	%β⁻=98.10 *10*; %ε+%β⁺=1.90 *10*.
788.441 *3*	3+	13.8 ps *12*	
1164.886 *3*	1+	6.4 ps *6*	
1601.113 *4*	1+	650 fs *40*	
1951.197 *3*	2−	1.8 ps *2*	
1959.406 *4*	2+	40 fs *11*	
2468.278 *3*	3−	1.04 ps *12*	
2492.319 *5*	2+	40 fs *11*	
2518.416 *6*	5−	1.61 ns *8*	
2676.429 *13*	1+	<7 fs	
2810.596 *5*	4−	2.8 ps *6*	
2863.951 *6*	3+	<10 fs	
2896.341 *5*	3−	600 fs *100*	
2994.687 *7*	(1,2)−	60 fs *12*	
3100.720 *4*	4−	150 fs *40*	
3332.312 *6*	2−	73 fs *14*	
3470.03 *3*	(1,2)+	<25 fs	
3599.550 *5*	3−	40 fs *15*	
3634.977 *14*	1−	20 fs *11*	
3660.366 *24*	(1,2,3)		
3941.27 *4*	(1+ to 3+)		
3962.929 *17*	2−	<20 fs	
4031.95 *3*	(0,1,2)−		
4061.470 *19*	(1,2)−		
4138.976 *16*	(2,3)−		
4205.64 *4*	(1,2)+		
4299.70 *4*	0+		
4315.64 *8*	(1,2,3)−		
4410.02 *3*	(1+ to 3+)		
4496.70 *3*	2−		
4525.187 *19*	1+		
4551.43 *7*	(1,2)+		
4598.49 *3*	3−		
4754.36 *4*	(1,2)−		
4757.996 *18*	3−		
4829.52 *4*	(1+ to 4+)		
4997.22 *3*	(2,3)−		
5018.10 *3*	(1− to 4+)		
5079.13 *4*	(1,2,3)−		
5150.644 *22*	(1,2,3)−		
5204.56 *3*	2−		
5246.64 *4*	(1+ to 3+)		
5263.01 *4*	(1,2)−		
5329.15 *6*	(0 to 3+)		
5463.498 *20*	(1,2)−		
5473.70 *5*	(0+ to 3+)		
5517.692 *15*	3−		
5563.583 *19*	(2−,3)		
5578.480 *20*	(1,2)−		
5604.27 *3*	2+		
5703.051 *25*	(0+ to 4+)		
5734.045 *14*	(2,3)−		
5778.55 *4*	(1+ to 4+)		
5956.686 *24*	(1,2)+		
6042.405 *21*	2−		

Continued on next page (footnotes at end of table)

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

^{36}Cl Levels (continued)

E(level)‡	Jπ†	Comments
6089.86 *4*	(0− to 3)	
6184.95 *5*	(1,2)+	
6253.58 *4*	(1,2)−	
6268.160 *17*	(2−,3)	
6339.89 *4*	(1,2,3)−	
6344.34 *4*	(0+ to 4+)	
6354.92 *5*	2+	
6379.488 *20*	(1,2)+	
6423.398 *18*	(2,3)−	
6487.71 *4*	(1,2,3)−	
6538.28 *3*	(0− to 3+)	
6544.974 *17*	(1,2)+	
6604.37 *3*	(1− to 3)	
6642.653 *22*	1−	
6773.20 *5*	(0 to 4)+	
6836.51 *4*	(0− to 3)	
6952.61 *4*	(1,2,3)	
7082.70 *4*	(0 to 3)+	
7559.17 *5*	(0+ to 4+)	
(8579.70 *7*)	1+,2+	E(level): 8579.70 keV *7* from evaluated S(n) (95Au04). Jπ: from s−wave neutron capture. Observed deexcitation intensity is 99.7% of g.s. feeding.

† From adopted levels, except as noted.
‡ From Eγ's using least−squares fit to data, except as noted.

γ(^{36}Cl)

All data are from 82Kr12, except as noted.
Iγ normalization: normalized from assuming Iγ(to g.s.)=100.

Eγ	E(level)	Iγ†#	Mult.§	δ§	Comments
85.743 *7*	2896.341	0.0076 *15*	(M1)		
x89.838 *16*		0.0030 *11*			
x90.028 *19*		0.0020 *10*			
x108.740 *32*		0.0040 *12*			
x111.546 *17*		0.0050 *13*			
x115.424 *28*		0.0030 *11*			
x133.558 *7*		0.0070 *23*			
x137.195 *30*		0.0030 *21*			
x151.159 *28*		0.0030 *21*			
204.373 *8*	3100.720	0.0119 *25*	(M1)		
x212.726 *10*		0.0090 *24*			
225.526 *36*	4525.187	0.0054 *17*			
	6268.160	0.0037 *15*			
236.710 *40*	3100.720	0.0059 *20*	(E1)		
x241.334 *76*		0.0040 *21*			
x272.760 *42*		0.0070 *32*			
x279.435 *42*		0.0090 *33*			
292.178 *4*	2810.596	0.263 *40*	M1(+E2)	+0.03 *3*	
302.751 *74*	3634.977	0.0068 *36*	(M1)		
x308.722 *24*		0.0370 *82*			
337.617 *5*	3332.312	0.0586 *90*	(M1)		
x340.27 *15*		0.0050 *31*			
342.311 *4*	2810.596	0.0175 *29*	(M1)		
x343.038 *78*		0.0080 *42*			
358.288 *5*	1959.406	0.220 *36*	(M1)		
369.281 *29*	3470.03	0.062 *15*			
371.562 *21*	4031.95	0.0044 *11*			
376.425 *25*	1164.886	0.041 *11*	(E2)		
x422.060 *30*		0.0040 *12*			
x427.534 *13*		0.0130 *28*			

Continued on next page (footnotes at end of table)

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

γ(^{36}Cl) (continued)

Eγ	E(level)	Iγ†#	Mult.§	δ§	Comments
427.855 *48*	5578.480	0.0319 *53*			
428.239 *73*	2896.341	0.0127 *22*			
435.969 *10*	3332.312	0.164 *25*	(M1)		
436.222 *2*	1601.113	1.05 *16*	(M1)		
x441.00 *12*		0.027 *13*			
x444.490 *13*		0.033 *10*			
x447.848 *12*		0.0070 *23*			
455.67 *11*	5473.70	0.0140 *67*			
x455.968 *16*		0.0070 *23*			
459.57 *11*	4598.49	0.0296 *96*			
x462.253 *72*		0.017 *20*			
463.699 *18*	4525.187	0.0064 *52*			
465.27 *24*	4496.70	0.0130 *97*			
466.06 *15*	5463.498	0.0163 *47*			
466.625 *99*	5018.10	0.033 *16*			
468.359 *3*	3332.312	0.089 *13*	(E1)		
468.765 *30*	4410.02	0.0099 *28*			
478.69 *14*	4138.976	0.088 *50*			
x485.868 *35*		0.0100 *43*			
495.891 *21*	6538.28	0.0095 *28*			
502.309 *24*	2994.687	0.0178 *45*	(E1)		
503.985 *63*	4138.976	0.0157 *31*			
508.866 *2*	2468.278	0.350 *53*	(E1)		
517.077 *1*	2468.278	24.3‡ *14*	M1+E2	+0.03 *1*	Iγ: 23.4 *35* (82Kr12).
532.906 *4*	2492.319	0.110 *18*	(M1)		
537.667 *41*	7082.70	0.0087 *30*			
539.60 *18*	4138.976	0.0369 *59*			
576.417 *60*	6354.92	0.0042 *11*			
582.324 *42*	3100.720	0.0102 *31*	(M1)		
x590.495 *68*		0.0040 *12*			
x595.84 *15*		0.0040 *12*			
x602.839 *43*		0.0040 *12*			
616.152 *31*	6089.86	0.086 *20*			
619.040 *62*	4757.996	0.0059 *18*			
x622.940 *48*		0.0060 *13*			
x628.941 *31*		0.0090 *42*			
630.556 *31*	3962.929	0.0106 *22*	(M1)		
632.438 *2*	3100.720	0.319 *48*	M1+E2	+0.07 *2*	
640.330 *33*	3634.977	0.0156 *29*	(M1)		
656.000 *84*	3332.312	0.0068 *16*	(E1)		
x659.653 *15*		0.0130 *28*			
x661.707 *11*		0.0210 *51*			
x663.429 *77*		0.0050 *13*			
665.636 *28*	3660.366	0.073 *16*			
696.499 *23*	4757.996	0.0141 *32*			
703.204 *7*	3599.550	0.114 *18*	(M1)		
x712.107 *94*		0.0050 *13*			
717.025 *25*	2676.429	0.0170 *37*	(M1)		
x723.105 *33*		0.0160 *38*			
x727.999 *27*		0.0220 *52*			
729.106 *81*	4061.470	0.0064 *16*			
735.578 *20*	3599.550	0.0363 *68*	(E1)		
760.365 *51*	5778.55	0.0238 *58*			
780.66 *68*	6253.58	0.012 *15*			
786.305 *2*	1951.197	10.52‡ *35*	(E1)		Iγ: 11.2 *17* (82Kr12).
788.432 *3*	788.441	16.32‡ *36*	M1+E2	+1.1 *2*	Iγ: 16.9 *25* (82Kr12), 15.0 (81Ke02).
812.608 *22*	1601.113	0.068 *11*	(E2)		
x832.080 *22*		0.100 *24*			
841.901 *23*	6544.974	0.0384 *84*			
x848.449 *55*		0.0300 *75*			
859.420 *12*	2810.596	0.106 *18*	E2(+M3)	−0.01 *4*	
864.021 *8*	3332.312	0.122 *20*	(M1)		
x865.395 *73*		0.0200 *50*			

Continued on next page (footnotes at end of table)

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

γ(^{36}Cl) (continued)

Eγ	E(level)	Iγ†#	Mult.§	δ§	Comments
870.484 *68*	6604.37	0.0156 *30*			
x884.87 *12*		0.0190 *76*			
x886.795 *60*		0.0170 *65*			
904.508 *25*	2863.951	0.0469 *76*			
x912.881 *16*		0.096 *22*			
936.921 *5*	2896.341	0.589 *88*	(E1)		
945.131 *14*	2896.341	0.139 *24*			
x946.297 *85*		0.0240 *79*			
958.559 *28*	3634.977	0.057 *11*	(E1)		
968.173 *53*	3962.929	0.0317 *68*	(M1)		
975.74 *12*	5734.045	0.0172 *39*			
979.615 *50*	5734.045	0.0337 *68*			
x989.634 *56*		0.041 *13*			
998.801 *94*	4598.49	0.0334 *60*			
1020.497 *51*	(8579.70)	0.073 *11*			
1034.261 *23*	4997.22	0.323 *50*			
x1035.125 *25*		0.123 *27*			
x1035.892 *92*		0.059 *14*			
1043.473 *24*	2994.687	0.099 *16*			
1066.723 *63*	3962.929	0.088 *16*	(M1)		
x1068.72 *13*		0.039 *12*			
1076.723 *47*	5018.10	0.0317 *65*			
1086.662 *36*	6604.37	0.069 *12*			
1089.43 *17*	5150.644	0.0331 *98*			
x1095.72 *29*		0.0170 *65*			
x1127.81 *20*		0.038 *11*			
1131.247 *5*	3599.550	1.911‡ *56*	(M1)		Iγ: 1.91 *29* (82Kr12).
1162.785 *16*	1951.197	2.29 *34*	(E1)		
1164.874 *4*	1164.886	27.20‡ *72*	M1+E2	−0.32 *6*	Iγ: 27.7 *42* (82Kr12).
1170.922 *19*	1959.406	0.510 *76*			
1201.98 *12*	5517.692	0.116 *18*			
1230.846 *52*	5263.01	0.101 *16*			
1258.028 *59*	6836.51	0.060 *12*			
1264.60 *13*	3941.27	0.067 *15*			
1265.42 *11*	6344.34	0.083 *15*			
1327.418 *10*	2492.319	1.27 *19*	M1+E2	−0.10 *7*	
1372.855 *26*	3332.312	0.384 *59*	(E1)		
1381.98 *21*	6379.488	0.0413 *86*			
1425.43 *11*	4757.996	0.071 *12*			
1496.702 *77*	(8579.70)	0.171 *27*			
1510.75 *15*	3470.03	0.150 *25*	(M1)		
1515.626 *80*	5150.644	0.077 *15*			
1517.056 *80*	6042.405	0.077 *15*			
1524.99 *20*	6604.37	0.080 *15*			
1526.26 *47*	6544.974	0.133 *26*			
1528.61 *15*	5734.045	0.121 *20*			
1601.082 *7*	1601.113	3.484‡ *89*			Iγ: 3.48 *35* (82Kr12), 3.82 *45* (81Ke02).
x1605.99 *15*		0.061 *12*			
1623.32 *20*	4299.70	0.105 *13*	M1		
1626.985 *43*	(8579.70)	0.298 *31*			
1640.116 *17*	3599.550	0.427 *43*	(E1)		
1648.305 *15*	3599.550	0.524 *53*			
1657.254 *29*	4757.996	0.236 *24*			
1679.761 *29*	2468.278	0.201 *21*			
1683.808 *32*	3634.977	0.225 *23*			
1709.83 *34*	3660.366	0.209 *22*			
1729.935 *50*	2518.416	0.344 *40*	M2+E3	−0.11 *1*	
1731.155 *50*	3332.312	0.219 *30*	(E1)		
1743.148 *43*	(8579.70)	0.249 *26*			
x1786.18 *10*		0.217 *35*			
1788.059 *60*	4598.49	0.374 *41*			
1806.421 *69*	(8579.70)	0.159 *18*			
1828.501 *18*	5463.498	0.368 *37*			

Continued on next page (footnotes at end of table)

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

γ(^{36}Cl) (continued)

Eγ	E(level)	Iγ†#	Mult.§	δ§	Comments
1858.089 *29*	6268.160	0.289 *29*			
1936.961 *20*	(8579.70)	0.430 *43*			
1951.145 *8*	1951.197	19.39‡ *57*	E1(+M2)	−0.10 *10*	Iγ: 20.2 *20* (82Kr12), 20.39 *76* (81Ke02).
1959.358 *14*	1959.406	12.56‡ *28*			Iγ: 12.9 *13* (82Kr12), 13.41 *58* (81Ke02).
1975.61 *29*	(8579.70)	0.694 *70*			
x1996.330 *53*		0.242 *36*			
2003.446 *36*	3962.929	0.203 *21*			
2011.760 *63*	3962.929	0.116 *13*	(E1)		
2022.098 *16*	2810.596	0.518 *52*	E1+M2	−0.14 *3*	
2034.634 *16*	(8579.70)	0.748 *75*			
2041.15 *13*	(8579.70)	0.593 *63*			
2075.547 *28*	2863.951	0.369 *40*			
2091.891 *40*	(8579.70)	0.206 *21*			
2110.247 *75*	4061.470	0.202 *21*			
2133.22 *18*	4997.22	0.0591 *92*			
2156.213 *18*	(8579.70)	0.679 *68*			
2179.529 *25*	4138.976	0.266 *27*			
2200.118 *19*	(8579.70)	0.391 *39*			
2224.684 *53*	(8579.70)	0.165 *18*			
2229.966 *50*	7559.17	0.0615 *80*			
2231.312 *50*	5563.583	0.348 *40*			
2235.363 *48*	(8579.70)	0.190 *20*			
2239.713 *38*	(8579.70)	0.242 *25*			
2246.213 *46*	4205.64	0.194 *20*			
2254.258 *70*	5150.644	0.237 *25*			
2265.79 *11*	4757.996	0.0624 *88*			
2282.861 *47*	6344.34	0.140 *15*			
2289.887 *60*	4757.996	0.483 *53*			
2311.406 *19*	(8579.70)	1.09 *11*			Iγ: 0.99 *9* (81Ke02).
2326.025 *38*	(8579.70)	0.234 *24*			
2342.27 *20*	6642.653	0.0417 *85*			
2355.89 *14*	4315.64	0.117 *16*			
2364.65 *16*	4315.64	0.0585 *81*			
2382.71 *11*	5246.64	0.149 *18*			
2394.636 *52*	(8579.70)	0.156 *17*			
2407.284 *33*	6042.405	0.195 *20*			
x2418.553 *30*		0.551 *79*			
2429.538 *90*	6089.86	0.166 *20*			
2467.72 *12*	2468.278	0.287 *36*			
2469.879 *46*	3634.977	0.731 *76*	(E1)		
2489.850 *69*	(8579.70)	0.455 *52*			
(2492.233)	2492.319	0.14 *4*			
x2494.831 *80*		0.207 *31*			
(2518.327)	2518.416	0.019 *2*	E3(+M4)	≈0.0	
2524.67 *11*	6487.71	0.110 *13*			
2527.944 *50*	5204.56	0.246 *26*			
2537.255@ *50*	4496.70	0.437@ *46*			
	(8579.70)	0.437@ *46*			
2549.81 *15*	5018.10	0.291 *49*			
2567.462 *87*	6773.20	0.172 *19*			
2569.88 *21*	5246.64	0.070 *12*			
2622.880 *24*	(8579.70)	0.633 *64*			
2639.057 *88*	4598.49	0.155 *18*			
2647.60 *35*	4598.49	0.278 *29*			
2653.49 *19*	5517.692	0.072 *11*			
2662.91 *12*	6604.37	0.111 *14*			
2676.300 *20*	2676.429	1.572‡ *38*			Iγ: 1.91 *19* (82Kr12), 2.06 *11* (81Ke02).
2682.398 *87*	5150.644	0.158 *18*			
2698.62 *12*	4299.70	0.0567 *74*	M1		
2711.618 *98*	6773.20	0.0865 *99*			
x2727.887 *66*		0.135 *15*			
2740.62 *32*	5604.27	0.127 *49*			
2753.01 *13*	5563.583	0.111 *14*			

Continued on next page (footnotes at end of table)

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

γ(^{36}Cl) (continued)

Eγ	E(level)	Iγ†#	Mult.§	Comments
2797.986 *95*	3962.929	0.294 *33*	(E1)	
	6268.160	0.294 *33*		
2800.846 *71*	(8579.70)	0.827 *86*		
2811.011 *35*	3599.550	0.482 *49*	(E1)	
2845.498 *12*	(8579.70)	1.27 *13*		Iγ: 1.22 *7* (81Ke02).
2863.815 *16*	2863.951	5.77‡ *11*		Iγ: 6.55 *66* (82Kr12), 6.63 *21* (81Ke02).
2867.16 *30*	4031.95	0.615 *87*		
x2871.407 *96*		0.311 *48*		
2876.640 *55*	(8579.70)	0.563 *61*		
2896.232 *16*	2896.341	0.553 *56*	(E1)	
2941.331 *88*	6042.405	0.129 *14*		
2953.23 *10*	6423.398	0.0635 *82*		
2955.12 *10*	5473.70	0.0717 *88*		
2975.235 *31*	(8579.70)	1.046‡ *25*		Iγ: 1.21 *12* (82Kr12).
2994.707 *6*	2994.687	0.91 *11*	(E1)	Iγ: 0.90 *6* (81Ke02).
3001.067 *21*	(8579.70)	0.697 *36*		Iγ: 0.71 *5* (81Ke02).
3015.985 *19*	(8579.70)	1.131 *58*		Iγ: 1.13 *7* (81Ke02).
3025.24 *31*	5517.692	0.0594 *95*		
3040.23 *42*	4205.64	0.0442 *97*		
3061.865 *22*	(8579.70)	3.521‡ *66*		Iγ: 3.88 *20* (82Kr12), 4.01 *14* (81Ke02).
3067.84 *20*	6538.28	0.176 *17*		
3086.28 *29*	5578.480	0.088 *13*		
3105.76 *16*	(8579.70)	0.169 *16*		
3116.216 *43*	(8579.70)	0.994 *55*		Iγ: 1.05 *6* (81Ke02).
(3134.66)	4299.70	0.03 *2*	M1	
3135.33 *15*	5604.27	0.1158 *99*		
3151.79 *24*	3941.27	0.0583 *73*		
x3203.79 *27*		0.0750 *97*		
3210.59 *20*	5703.051	0.0584 *77*		
3244.36 *16*	4410.02	0.0988 *88*		
3250.357 *77*	(8579.70)	0.255 *15*		
x3255.70 *44*		0.0370 *72*		
3271.48 *17*	6604.37	0.1005 *98*		
3291.88 *25*	6952.61	0.094 *14*		
3295.85 *28*	5246.64	0.092 *14*		
3311.71 *23*	5263.01	0.0435 *49*		
3316.363 *47*	(8579.70)	0.257 *14*		
3333.09 *10*	(8579.70)	0.827 *44*		Iγ: 0.84 *5* (81Ke02).
3349.747 *94*	4138.976	0.238 *16*		
3374.895 *46*	(8579.70)	0.600 *33*		Iγ: 0.64 *4* (81Ke02).
3385.53 *42*	4551.43	0.0421 *82*		
3428.863 *29*	(8579.70)	0.895 *46*		Iγ: 0.90 *5* (81Ke02).
x3435.89 *12*		0.134 *12*		
3457.44 *20*	6268.160	0.0512 *86*		
3458.40 *20*	6354.92	0.0328 *84*		
3470.06 *14*	3470.03	0.1003 *79*		
3489.73 *87*	6354.92	0.0118 *58*		
3500.378 *57*	(8579.70)	0.330 *18*		
3504.166 *86*	6836.51	0.199 *13*		
3512.21 *12*	5463.498	0.0772 *59*		
3526.85 *12*	6423.398	0.0748 *59*		
3558.23 *24*	5517.692	0.172 *25*		
3561.258 *79*	(8579.70)	0.693 *42*		
3566.611 *73*	5517.692	0.310 *18*		Iγ: 0.24 *2* (81Ke02).
3581.90 *16*	(8579.70)	0.133 *14*		
3589.234 *50*	4754.36	0.605 *34*		Iγ: 0.48 *3* (81Ke02).
3599.251 *65*	3599.550	0.539 *31*	(E1)	Iγ: 0.51 *3* (81Ke02).
3604.112 *82*	5563.583	0.401 *25*		Iγ: 0.39 *3* (81Ke02).
3612.62 *18*	5563.583	0.109 *11*		
3621.67 *19*	4410.02	0.117 *11*		
3627.27 *18*	5578.480	0.127 *12*		
3634.480 *73*	3634.977	0.334 *21*	(E1)	Iγ: 0.31 *2* (81Ke02).
3645.58 *34*	5246.64	0.0404 *67*		

Continued on next page (footnotes at end of table)

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

γ(^{36}Cl) (continued)

Eγ	E(level)	Iγ†#	Mult.§	Comments
3660.23 *16*	3660.366	0.209 *22*		
3707.824 *61*	4496.70	0.182 *11*		
3728.20 *20*	5329.15	0.0438 *54*		
3736.541 *56*	4525.187	0.197 *11*		
3743.77 *11*	5703.051	0.0958 *68*		
3749.905 *44*	(8579.70)	0.309 *17*		Iγ: 0.34 *3* (81Ke02).
(3751.74)	5703.051	0.08 *2*		
3809.63 *28*	4598.49	0.0508 *78*		
3821.581 *42*	(8579.70)	1.095 *58*		Iγ: 1.08 *5* (81Ke02).
3825.53 *36*	(8579.70)	0.842 *46*		Iγ: 0.84 *4* (81Ke02).
x3860.18 *11*		0.1070 *88*		
3916.37 *17*	5517.692	0.0685 *57*		
3962.60 *15*	3962.929	0.367 *36*	(E1)	Iγ: 0.41 *3* (81Ke02).
3977.24 *28*	5578.480	0.126 *17*		
3981.064 *46*	(8579.70)	1.028 *55*		Iγ: 1.04 *5* (8ke02).
3997.14 *29*	5956.686	0.0687 *86*		
4028.054 *93*	(8579.70)	0.193 *13*		
4041.08 *18*	4829.52	0.0845 *82*		
4054.226 *41*	(8579.70)	0.626 *33*		Iγ: 0.65 *3* (81Ke02).
4061.048 *83*	4061.470	0.242 *15*		
4082.664 *42*	(8579.70)	0.785 *41*		
4086.62 *50*	7082.70	0.063 *11*		
4091.50 *55*	6042.405	0.0302 *61*		
4097.90 *40*	5263.01	0.0285 *51*		
4111.76 *12*	6604.37	0.1003 *77*		
4138.456 *76*	6089.86	0.372 *22*		Iγ: 0.32 *2* (81Ke02).
x4148.6 *11*		0.0110 *50*		
4164.17 *23*	5329.15	0.0767 *76*		
4169.20 *39*	(8579.70)	0.0576 *74*		
4173.79 *84*	6642.653	0.0205 *64*		
x4192.30 *28*		0.0270 *42*		
4205.14 *13*	4205.64	0.1232 *78*		
4264.01 *36*	(8579.70)	0.0307 *45*		
4294.58 *51*	6253.58	0.0424 *94*		
4298.384 *67*	5463.498	0.389 *22*		Iγ: 0.42 *3* (81Ke02).
4308.28 *41*	5473.70	0.0427 *72*		
4355.00 *10*	5956.686	0.1459 *94*		
4413.59 *25*	5578.480	0.175 *33*		
4416.11 *48*	5204.56	0.122 *29*		
4420.60 *50*	6379.488	0.0363 *71*		
4440.399 *23*	(8579.70)	1.047‡ *23*		Iγ: 1.085 *55* (82Kr12), 1.11 *4* (81Ke02).
4458.20 *11*	5246.64	0.1058 *73*		
x4473.33 *30*		0.0270 *42*		
4518.12 *10*	(8579.70)	0.155 *10*		
4524.866 *45*	4525.187	0.459 *24*		Iγ: 0.47 *3* (81Ke02).
4547.473 *69*	(8579.70)	0.453 *26*		Iγ: 0.47 *3* (81Ke02).
4551.41 *22*	4551.43	0.131 *13*		
x4558.08 *88*		0.0150 *51*		
4586.602 *66*	6538.28	0.272 *15*		
x4591.85 *35*		0.0480 *65*		
4597.50 *26*	4598.49	0.0483 *52*		
4616.436 *35*	(8579.70)	0.682 *35*		Iγ: 0.71 *3* (81Ke02).
4637.59 *71*	(8579.70)	0.0139 *47*		
4652.90 *29*	6253.58	0.0297 *40*		
x4683.51 *16*		0.0580 *58*		
4728.966 *31*	5517.692	0.702 *36*		Iγ: 0.73 *3* (81Ke02).
x4747.14 *30*		0.0360 *44*		
4753.31 *16*	6354.92	0.1235 *90*		
4757.48 *14*	4757.996	0.1365 *95*		
4791.44 *31*	5956.686	0.0280 *39*		
4815.297 *77*	5604.27	0.1542 *92*		
4829.064 *64*	4829.52	0.194 *11*		Iγ: 0.21 *2* (81Ke02).
4884.85 *12*	6836.51	0.0928 *64*		

Continued on next page (footnotes at end of table)

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

γ(^{36}Cl) (continued)

Eγ	E(level)	Iγ†#	Comments
4944.335 *50*	(8579.70)	1.107 *75*	Iγ: 1.19 *4* (81Ke02).
4945.195 *50*	5734.045	0.635 *60*	
x4950.85 *19*		0.159 *16*	
4979.713 *25*	(8579.70)	3.616‡ *96*	Iγ: 3.60 *18* (82Kr12), 3.95 *10* (81Ke02).
4989.96 *12*	5778.55	0.309 *19*	
5000.55 *34*	6952.61	0.0459 *73*	
5017.726 *54*	5018.10	0.465 *25*	Iγ: 0.52 *3* (81Ke02).
5078.818 *65*	5079.13	0.1520 *86*	Iγ: 0.16 *1* (81Ke02).
5088.05 *22*	6253.58	0.0377 *40*	
5109.25 *13*	(8579.70)	0.0866 *65*	Iγ: 0.09 *1* (81Ke02).
5122.82 *30*	7082.70	0.0346 *45*	
x5142.12 *16*		0.0720 *70*	
5150.195 *67*	5150.644	0.202 *11*	Iγ: 0.23 *2* (81Ke02).
5204.230 *66*	5204.56	0.205 *12*	Iγ: 0.22 *2* (81Ke02).
5246.189 *50*	5246.64	0.27 *10*	
5246.909 *50*	(8579.70)	0.27 *10*	Iγ: 0.59 *3* (81Ke02).
5262.76 *17*	5263.01	0.0985 *76*	
5372.35 *25*	6538.28	0.0494 *51*	
5473.34 *20*	5473.70	0.0857 *74*	
5517.202 *26*	5517.692	1.689‡ *42*	Iγ: 1.707 *87* (82Kr12), 1.75 *5* (81Ke02).
5584.617 *38*	(8579.70)	0.536 *28*	Iγ: 0.52 *2* (81Ke02).
5603.867 *52*	5604.27	0.358 *19*	Iγ: 0.36 *2* (81Ke02).
5634.38 *24*	6423.398	0.0570 *57*	
5702.63 *14*	5703.051	0.431 *30*	Iγ: 0.39 *2* (81Ke02).
5715.187 *26*	(8579.70)	5.31‡ *15*	Iγ: 5.60 *28* (82Kr12), 5.68 *12* (81Ke02).
5733.48 *16*	5734.045	0.510 *37*	Iγ: 0.46 *2* (81Ke02).
5777.45 *34*	5778.55	0.123 *17*	Iγ: 0.15 *1* (81Ke02).
5902.700 *27*	(8579.70)	1.104‡ *31*	Iγ: 11.132 *57* (82Kr12), 1.18 *4* (81Ke02).
5956.294 *93*	5956.686	0.191 *11*	Iγ: 0.20 *1* (81Ke02).
x6051.16 *26*		0.0420 *45*	
6086.744 *43*	(8579.70)	0.844 *44*	Iγ: 0.94 *3* (81Ke02).
6110.848 *38*	(8579.70)	20.58‡ *65*	Iγ: 20.2 *10* (82Kr12), 20.96 *33* (81Ke02).
6184.33 *13*	6184.95	0.0818 *59*	Iγ: 0.10 *1* (81Ke02).
6252.99 *18*	6253.58	0.0748 *62*	
6267.810 *46*	6268.160	0.441 *23*	Iγ: 0.43 *2* (81Ke02).
6339.72 *29*	6339.89	0.0726 *86*	
6343.88 *36*	6344.34	0.0597 *82*	
6378.945 *71*	6379.488	0.199 *11*	Iγ: 0.21 *1* (81Ke02).
6422.845 *56*	6423.398	0.278 *15*	Iγ: 0.29 *2* (81Ke02).
6487.040 *82*	6487.71	0.1373 *80*	Iγ: 0.13 *1* (81Ke02).
6544.112 *81*	6544.974	0.1535 *87*	Iγ: 0.14 *1* (81Ke02).
6619.638 *44*	(8579.70)	7.83‡ *16*	Iγ: 7.80 *39* (82Kr12), 8.31 *16* (81Ke02).
6627.751 *59*	(8579.70)	4.69‡ *11*	Iγ: 4.83 *24* (82Kr12), 4.74 *10* (81Ke02).
6641.98 *46*	6642.653	0.186 *32*	
6951.807 *74*	6952.61	0.1578 *88*	Iγ: 0.15 *1* (81Ke02).
6977.847 *47*	(8579.70)	2.290‡ *64*	Iγ: 2.32 *12* (82Kr12), 2.40 *6* (81Ke02).
x7377.38 *41*		0.0310 *43*	
7413.953 *65*	(8579.70)	10.52‡ *24*	Iγ: 10.36 *52* (82Kr12), 10.69 *19* (81Ke02).
7558.21 *43*	7559.17	0.0230 *35*	
7790.325 *64*	(8579.70)	8.31‡ *19*	Iγ: 8.48 *42* (82Kr12), 8.69 *16* (81Ke02).
8578.59 *11*	(8579.70)	2.739‡ *57*	Iγ: 2.78 *14* (82Kr12), 2.84 *7* (81Ke02).

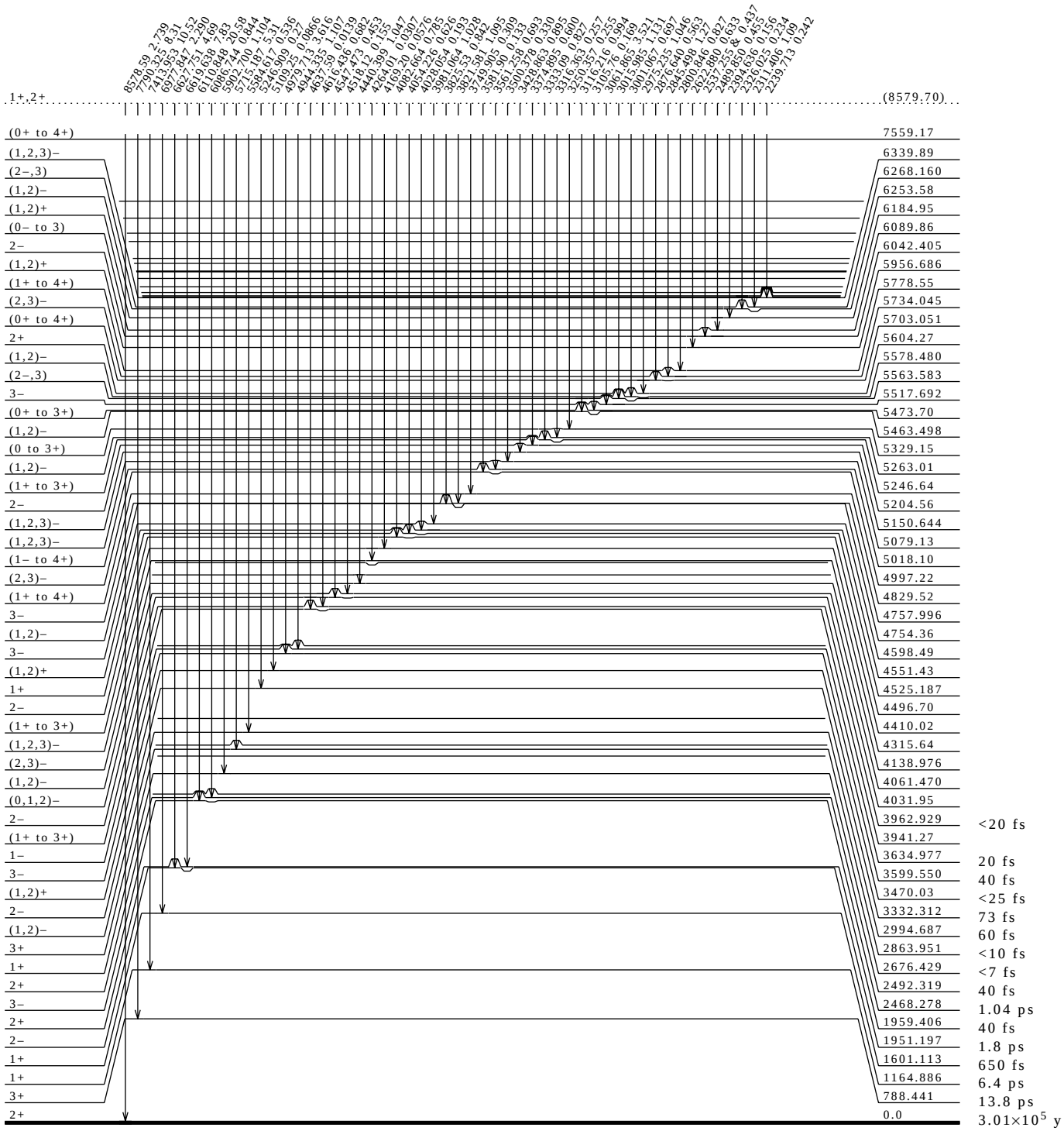
† Absolute intensities per 100 neutron captures.
‡ From 96Co16.
§ From adopted gammas.
# For intensity per 100 neutron captures, multiply by 1.
@ Multiply placed; undivided intensity given.
x γ ray not placed in level scheme.

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

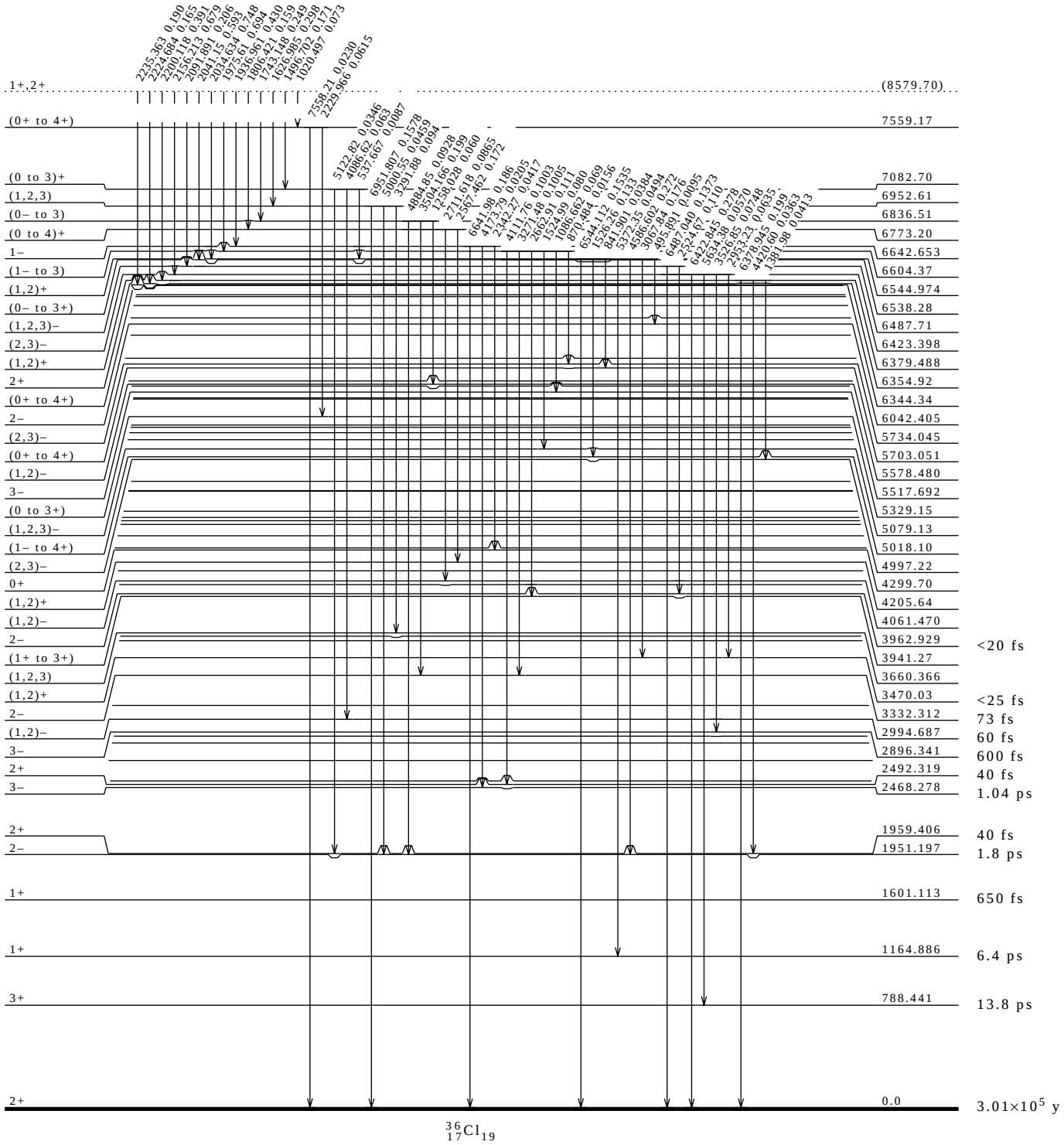


$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

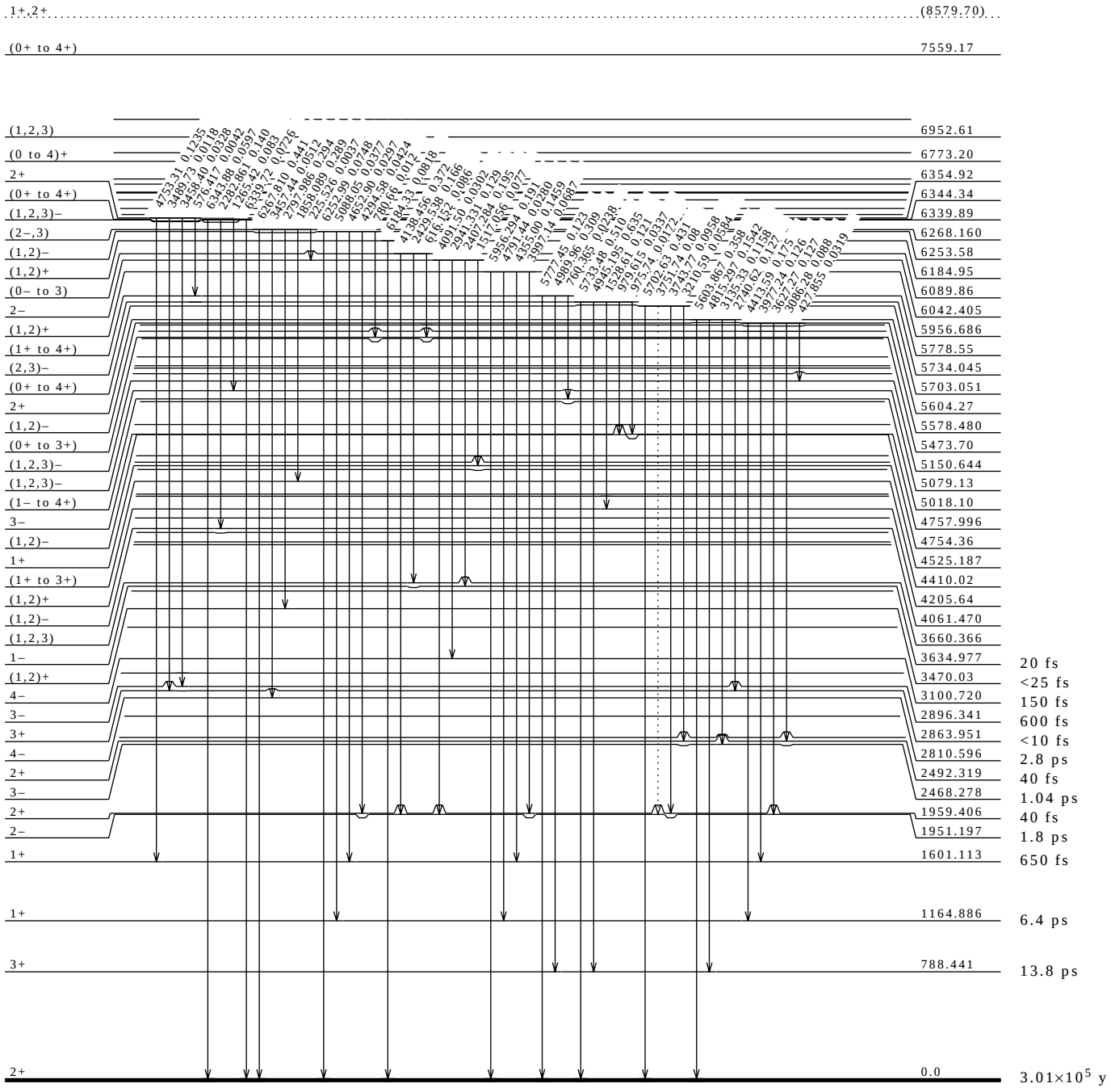


$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



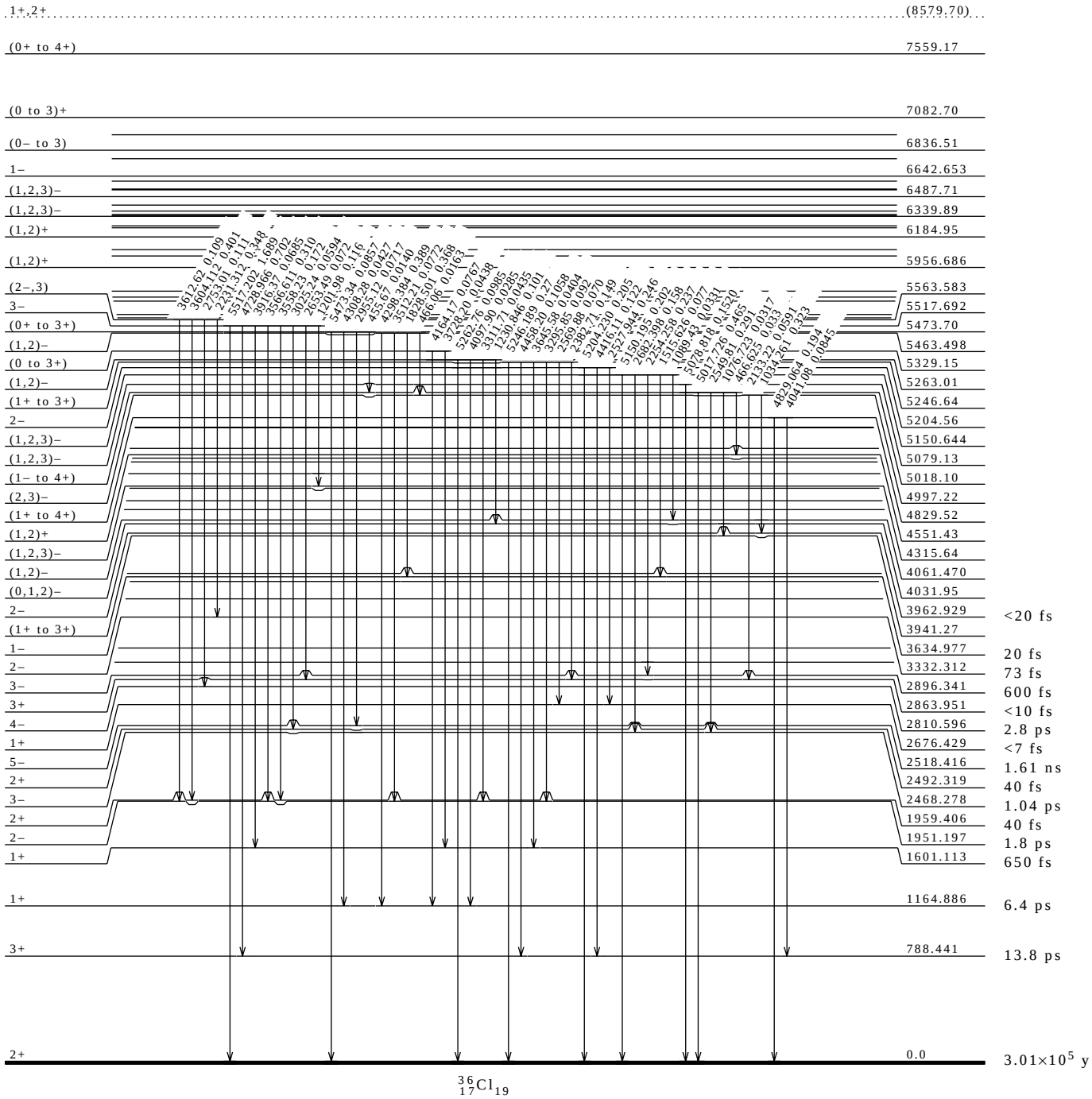
$^{36}_{17}Cl_{19}$

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

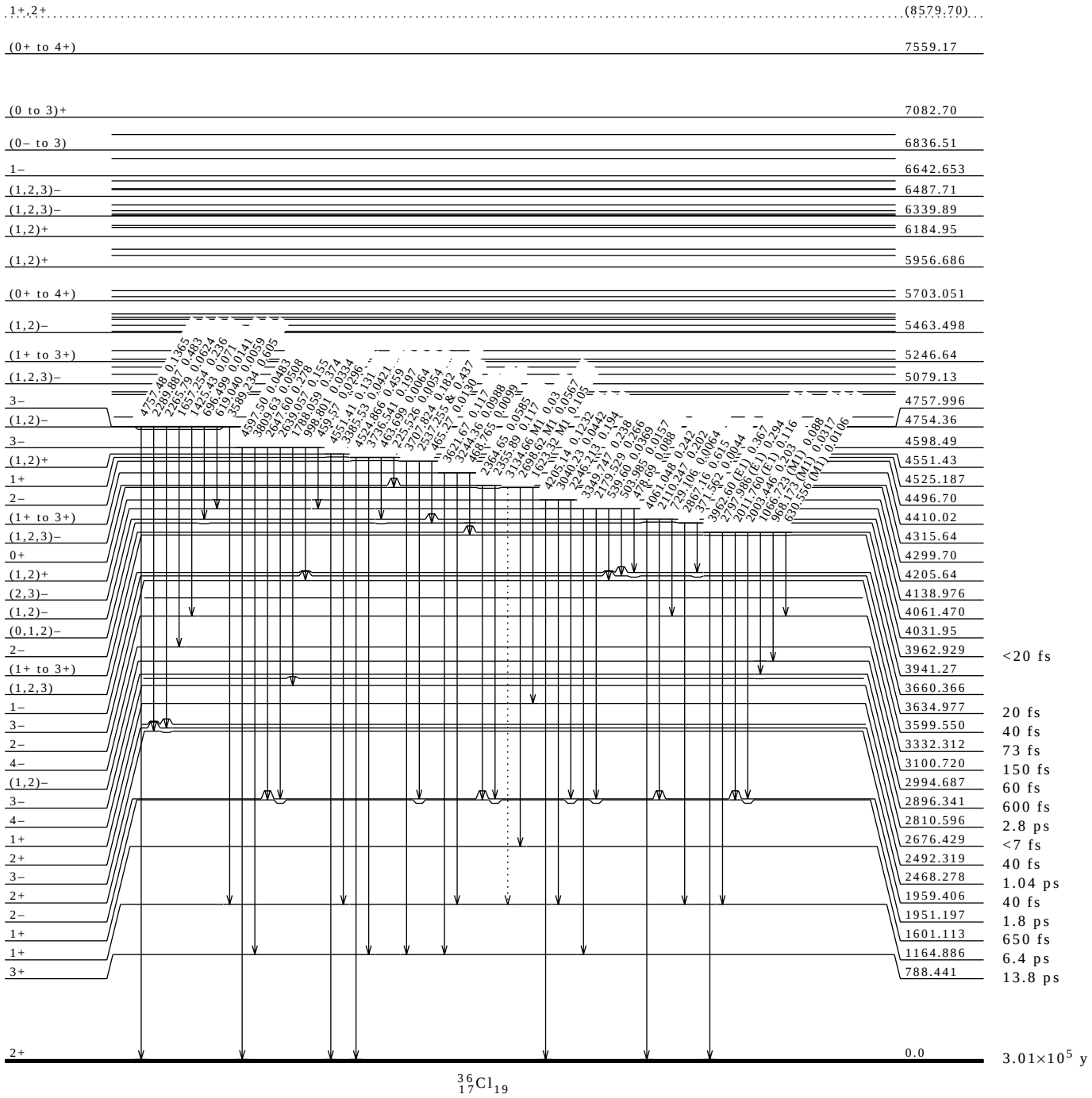


$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given

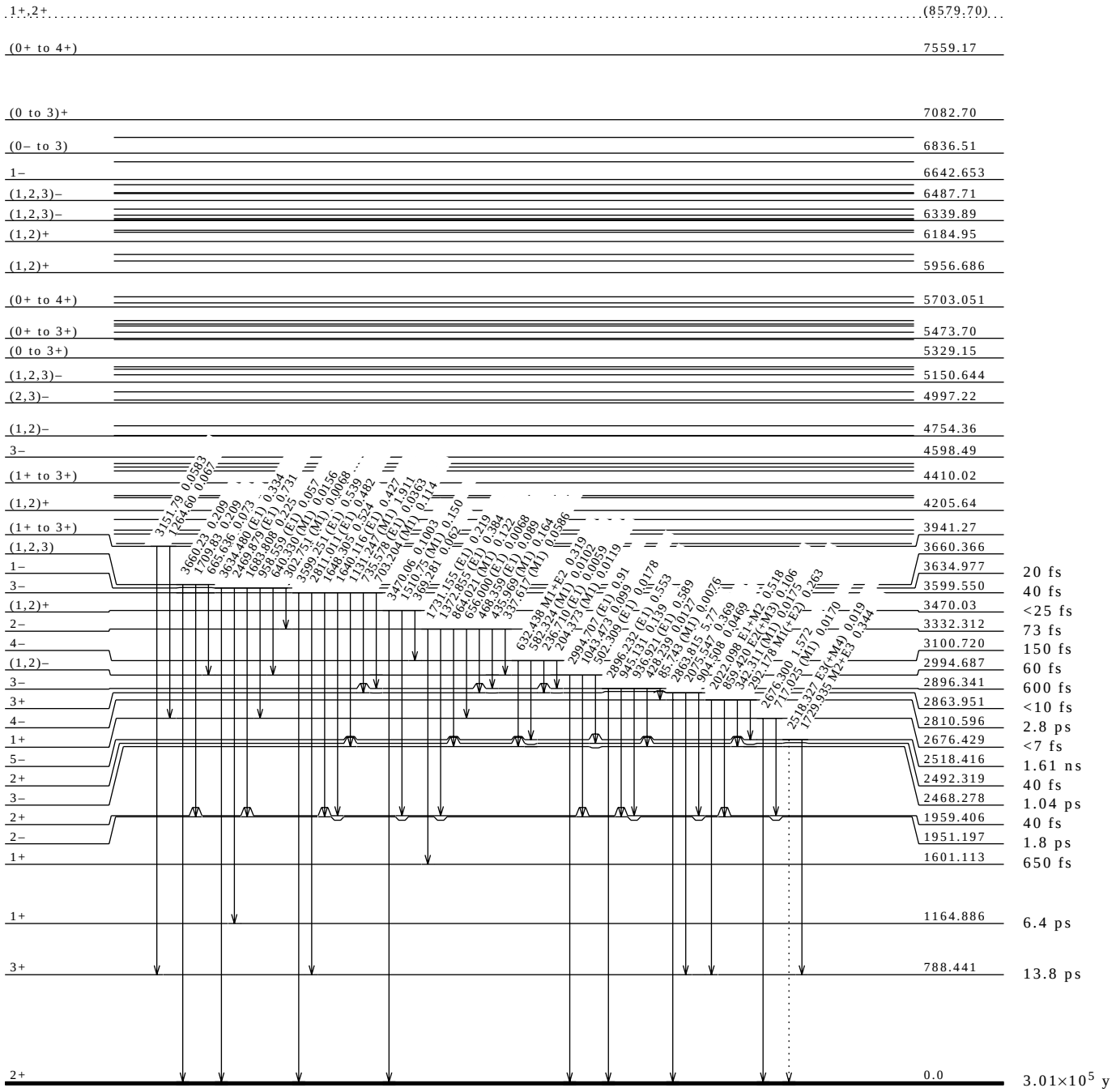


$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



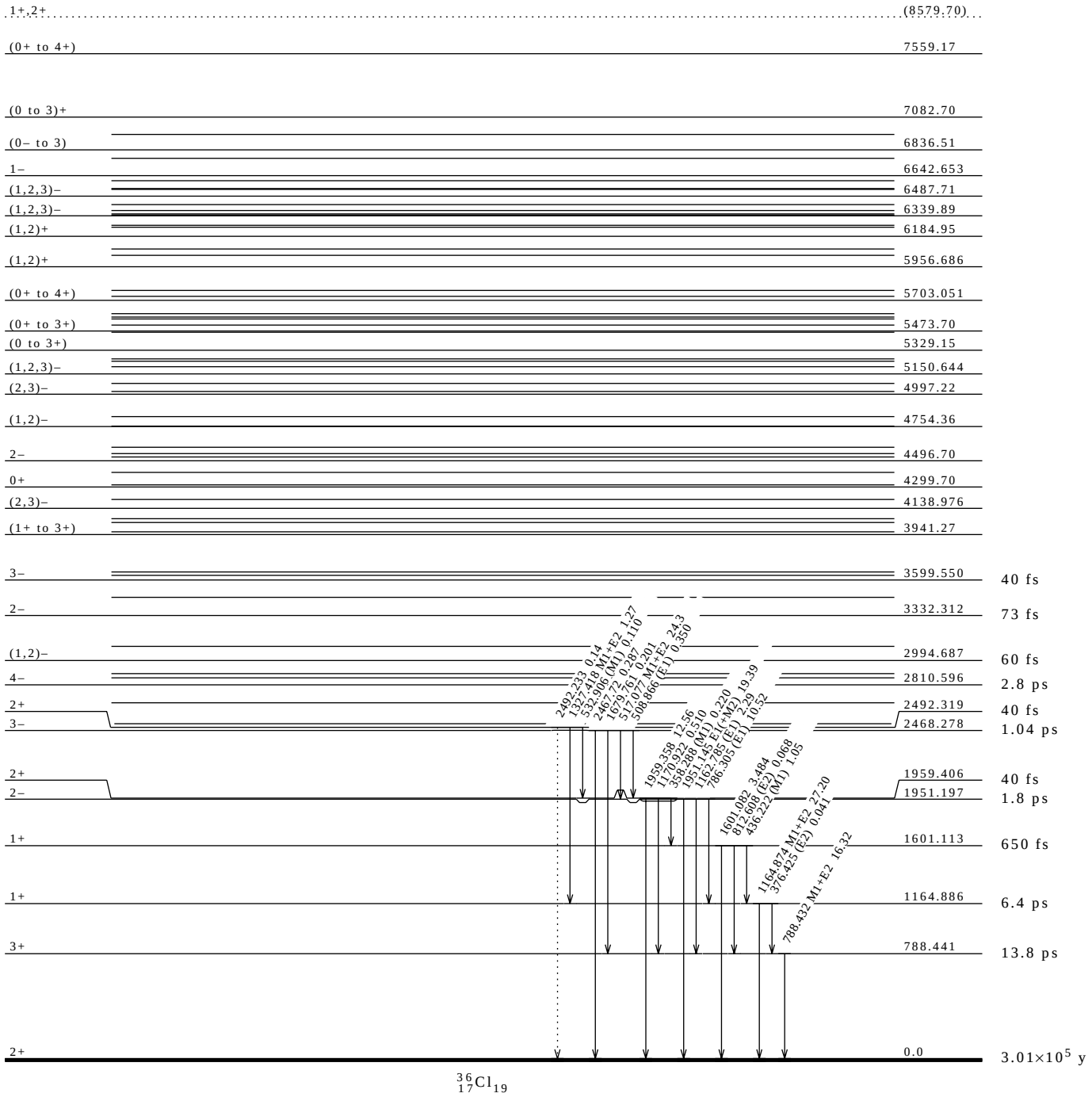
$^{36}_{17}Cl_{19}$

$^{36}_{17}Cl_{19}$

^{35}Cl(n,γ) E=thermal 82Kr12,81Ke02,96Co16 (continued)

Level Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given



$^{36}_{17}Cl_{19}$

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