^{34}S(n,γ) E=thermal 1985Ra15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, John Cameron and Balraj Singh	NDS 112,2715 (2011)	20-Oct-2011

1985Ra15: Thermal neutron flux of 6x10^{11} n/cm^2 at the target position from the Los Alamos Omega West Reactor at nominal 8-MW reactor power level. Targets: stable sulfur isotopes (^{32}S, ^{33}S, ^{34}S and ^{36}S). Detectors: a 26 cm^3 coaxial Ge(Li) detector inside a 20-cm-diam by 30-cm-long NaI(Tl) annulus (FWHM=2.3 keV at 1 MeV, 5.5 keV at 6 MeV and 8.8 keV at 11 MeV). Measured σ_γ, Eγ, Iγ. Deduced levels, branching ratios for the nuclei of ^{33}S, ^{34}S, ^{35}S and ^{37}S.

1972Dz13: Thermal neutron beam produced from the thermal column of the IRT reactor of the Baghdad Nuclear Research Institute. A 97%-enriched sulphur target. A Ge(Li) detector for detecting γ-rays. Measured Eγ, Iγ. Deduced levels, branching ratios.

1985Ke08: Thermal neutron beam of 5x10^{12} cm_1s_1 from the McMaster University Reactor, captured on targets of natural ^{32}S and ^{34}S. 1 10% efficient Ge centered in a NaI(Tl) annulus, FWHM= 3.2-4.4 keV. Measured Eγ, Iγ. Deduced levels, Q.

1997Be42: Thermal neutron beam from the reactor BR1 of the "Studiecentrum voor kernenergie" in Mol, Belgium. Target: enriched in ^{34}S by 93.26% and in ^{36}S by 5.933%. A Ge-detector for detecting γ-rays. Measured Eγ, Iγ. Deduced capture cross section, levels, spectroscopic factors.

2007ChZX: Compilation of Eγ, Iγ from neutron capture for nuclei of Z=1-92. 5 primary γ′s and 13 secondary γ′s reported for ^{35}S.

Additional information 1.

^{35}S Levels

E(level)†	Jπ‡	S#
0	3/2+	
1572.369 *9*	1/2+	
1991.28 *5*	7/2−	
2347.779 *10*	3/2−	0.48
2716.987 *21*	5/2+	
2938.65 *5*	3/2+	
3558.08 *3*	(3/2−,5/2+)	
3801.948 *17*	3/2−	0.08
4105.6 *8*	(1/2 to 5/2)+	
4189.272 *16*	1/2−	0.15
4477.60 *7*	(1/2 to 5/2)+	
4903.367 *16*	1/2−	0.49
4963.083 *23*	3/2−	0.19
5752.5 *8*	(1/2 to 9/2−)	
6018.8 *6*	(1/2 to 9/2−)	
6078.48 *4*	1/2−,3/2−	
6293.93 *6*	(1/2 to 9/2−)	
6354.89 *23*	(1/2 to 9/2−)	
6419.9 *11*	(1/2 to 9/2−)	
6629.43 *10*	(1/2 to 9/2−)	
6761.0 *12*	(1/2 to 9/2−)	
(6986.097 *23*)	1/2+	

† From least-squares fit to Eγ′s.
‡ From Adopted Levels.
# From 1997Be42.

γ(^{35}S)

Eγ‡&	Iγ†‡f	Ei(level)	Jπi	Ef	Jπf
356.66@ *9*	0.037 *4*	2347.779	3/2−	1991.28	7/2−
356.66@ *9*	0.037 *4*	(6986.097)	1/2+	6629.43	(1/2 to 9/2−)
368.5 *4*	0.020 *7*	2716.987	5/2+	2347.779	3/2−
619.23 *19*	0.041 *8*	3558.08	(3/2−,5/2+)	2938.65	3/2+
631.32@ *24*	0.059 *9*	4189.272	1/2−	3558.08	(3/2−,5/2+)
631.32@ *24*	0.059 *9*	(6986.097)	1/2+	6354.89	(1/2 to 9/2−)
x663.41 *7*	0.09 *1*				
692.16 *5*	0.133 *17*	(6986.097)	1/2+	6293.93	(1/2 to 9/2−)
775.398# *6*	17.2# *19*	2347.779	3/2−	1572.369	1/2+
x803.81 *9*	0.092 *14*				
863.28 *28*	0.034 *10*	3801.948	3/2−	2938.65	3/2+
907.608# *23*	0.56# *10*	(6986.097)	1/2+	6078.48	1/2−,3/2−
1084.79 *15*	0.054 *10*	3801.948	3/2−	2716.987	5/2+

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^{34}S(n,γ) E=thermal 1985Ra15 (continued)

γ(^{35}S) (continued)

E_γ[‡&]	I_γ[†‡f]	E_i(level)	J^π_i	E_f	J^π_f
1101.92 *31*	0.033 *8*	4903.367	1/2⁻	3801.948	3/2⁻
1144.591 *20*	0.55 *6*	2716.987	5/2⁺	1572.369	1/2⁺
1161.05 *20*	0.055 *8*	4963.083	3/2⁻	3801.948	3/2⁻
1210.28 *4*	0.252 *27*	3558.08	(3/2⁻,5/2⁺)	2347.779	3/2⁻
1250.61 *5*	0.214 *24*	4189.272	1/2⁻	2938.65	3/2⁺
[x]1381.67 *24*	0.024 *8*				
1404.967 *24*	0.60 *6*	4963.083	3/2⁻	3558.08	(3/2⁻,5/2⁺)
1454.09 *4*	0.45 *11*	3801.948	3/2⁻	2347.779	3/2⁻
1566.7 *3*	0.47 *9*	3558.08	(3/2⁻,5/2⁺)	1991.28	7/2⁻
1572.33[#] *1*	32.4[#] *4*	1572.369	1/2⁺	0	3/2⁺
1760.55 *11*	0.146 *20*	4477.60	(1/2 to 5/2)⁺	2716.987	5/2⁺
1841.426 *15*	2.14[a] *21*	4189.272	1/2⁻	2347.779	3/2⁻
1964.8 *2*	0.37 *10*	4903.367	1/2⁻	2938.65	3/2⁺
1991.27 *5*	0.54 *6*	1991.28	7/2⁻	0	3/2⁺
2022.954[#] *9*	9.7[#] *6*	(6986.097)	1/2⁺	4963.083	3/2⁻
2082.72[#] *7*	15.4[#] *9*	(6986.097)	1/2⁺	4903.367	1/2⁻
2186.3[d]	4.7[e] *5*	4903.367	1/2⁻	2716.987	5/2⁺
2229.510 *16*	2.86 *27*	3801.948	3/2⁻	1572.369	1/2⁺
2347.69[#] *2*	51[#] *4*	2347.779	3/2⁻	0	3/2⁺
2508.39 *8*	0.38 *4*	(6986.097)	1/2⁺	4477.60	(1/2 to 5/2)⁺
2555.492[#] *14*	3.1[#] *3*	4903.367	1/2⁻	2347.779	3/2⁻
2615.2 *2*	1.09 *10*	4963.083	3/2⁻	2347.779	3/2⁻
2616.87 *3*	0.24[b] *7*	4189.272	1/2⁻	1572.369	1/2⁺
2716.99 *16*	0.30 *5*	2716.987	5/2⁺	0	3/2⁺
2796.73[#] *4*	5.0[#] *2*	(6986.097)	1/2⁺	4189.272	1/2⁻
2905.1 *4*	0.14 *4*	4477.60	(1/2 to 5/2)⁺	1572.369	1/2⁺
2938.58 *11*	0.89 *9*	2938.65	3/2⁺	0	3/2⁺
2972.0 *4*	0.18 *6*	4963.083	3/2⁻	1991.28	7/2⁻
3139.9 *5*	0.078 *24*	6078.48	1/2⁻,3/2⁻	2938.65	3/2⁺
3183.84[#] *9*	5.9[#] *3*	(6986.097)	1/2⁺	3801.948	3/2⁻
3330.81[#] *14*	7.6[#] *7*	4903.367	1/2⁻	1572.369	1/2⁺
3390.56[#] *5*	5.7[#] *5*	4963.083	3/2⁻	1572.369	1/2⁺
3558.1 *5*	0.085 *17*	3558.08	(3/2⁻,5/2⁺)	0	3/2⁺
3801.69[#] *8*	2.60[#] *16*	3801.948	3/2⁻	0	3/2⁺
4105.3 *8*	0.048 *17*	4105.6	(1/2 to 5/2)⁺	0	3/2⁺
4188.95[#] *8*	2.67[#c] *19*	4189.272	1/2⁻	0	3/2⁺
4268.64[#] *14*	0.34[#] *4*	(6986.097)	1/2⁺	2716.987	5/2⁺
4637.87[#] *8*	53[#] *2*	(6986.097)	1/2⁺	2347.779	3/2⁻
4902.97[#] *4*	4.12[#] *19*	4903.367	1/2⁻	0	3/2⁺
4962.84[#] *8*	2.35[#] *21*	4963.083	3/2⁻	0	3/2⁺
5752.0 *8*	0.018 *5*	5752.5	(1/2 to 9/2⁻)	0	3/2⁺
6018.2 *6*	0.020 *7*	6018.8	(1/2 to 9/2⁻)	0	3/2⁺
6077.87[#] *11*	0.35[#] *4*	6078.48	1/2⁻,3/2⁻	0	3/2⁺
6293.2 *4*	0.065 *14*	6293.93	(1/2 to 9/2⁻)	0	3/2⁺
6355.0 *6*	0.046 *7*	6354.89	(1/2 to 9/2⁻)	0	3/2⁺
6419.3 *11*	0.016 *5*	6419.9	(1/2 to 9/2⁻)	0	3/2⁺
6628.5 *6*	0.030 *6*	6629.43	(1/2 to 9/2⁻)	0	3/2⁺
6760.3 *12*	0.019 *8*	6761.0	(1/2 to 9/2⁻)	0	3/2⁺
6985.7 *10*	0.036 *8*	(6986.097)	1/2⁺	0	3/2⁺

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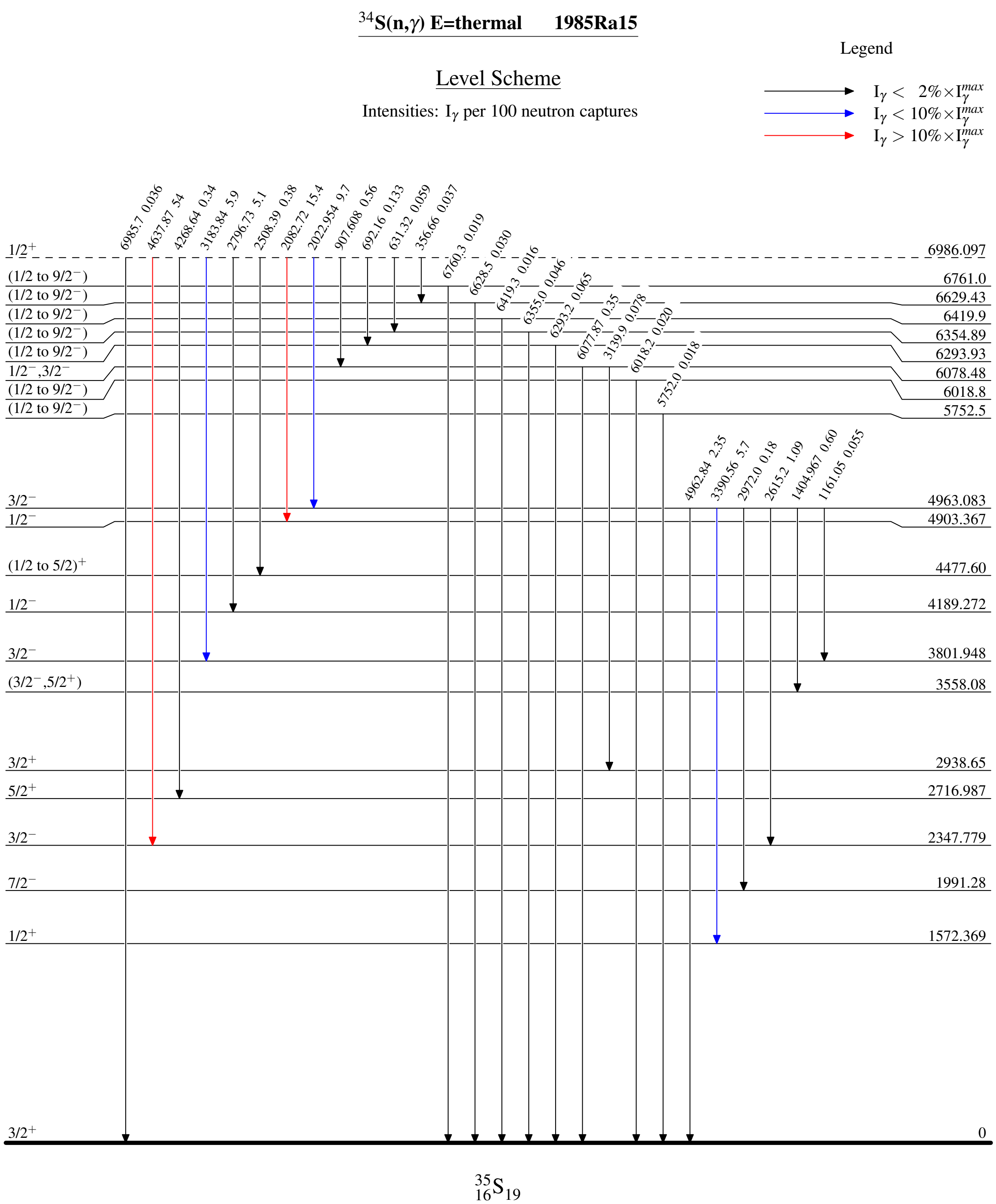
^{34}S(n,γ) E=thermal 1985Ra15 (continued)

γ(^{35}S) (continued)

† Normalized to photons per 100 neutron captures. Multiply 1/0.340 to obtain γ-ray cross section in mb (1985Ra15). In all papers, intensities are normalized to the 4638 transition, 56 *6* in 1972Dz13, 59 *5* in 1985Ke08, 55 *5* in 1985Ra15,51 *2* in 1997Be42.
‡ From 1985Ra15, unless otherwise noted.
# Weighted average from available values among 1972Dz13, 1985Ke08, 1985Ra15 and 1997Be42.
@ γ-ray placed twice.
& Gamma energies have been compared and agree with those in the PGAA- LBL Budapest database (2007ChZX).
[a] 1972Dz13 gives 3.6 *8*.
[b] 1972Dz13 gives 1.3 *4*.
[c] 1985Ke08 gives 24 *2*.
[d] 2184.16 *19* from 1985Ke08.
[e] From 1985Ke08.
[f] Intensity per 100 neutron captures.
[x] γ ray not placed in level scheme.

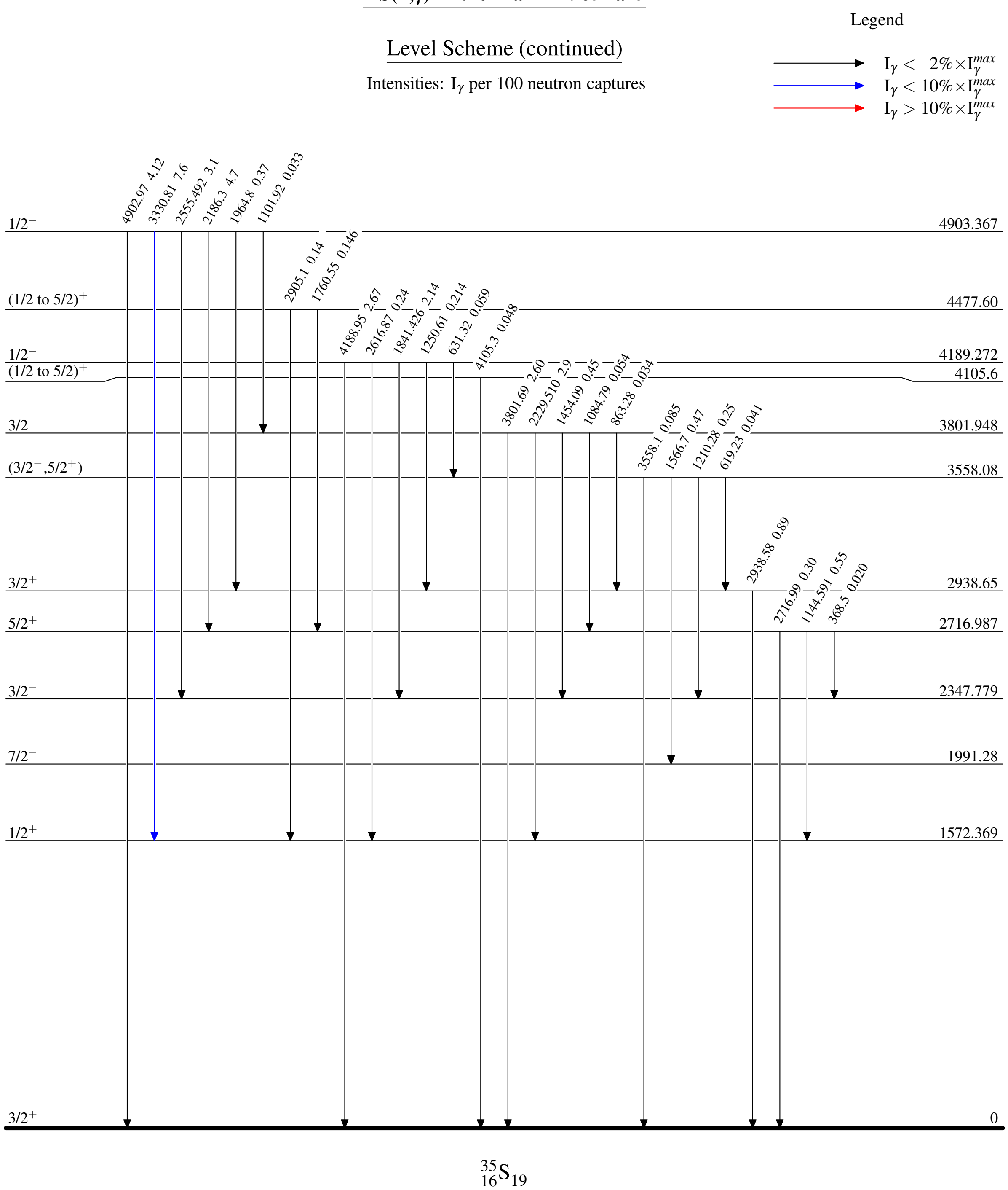


34S(n,γ) E=thermal 1985Ra15
Level Scheme
Intensities: Iγ per 100 neutron captures
Legend
Iγ < 2%×Iγmax
Iγ < 10%×Iγmax
Iγ > 10%×Iγmax
6985.7 0.036
4637.87 54
4268.64 0.34
3183.84 5.9
2796.73 5.1
2508.39 0.38
2082.72 15.4
2022.954 9.7
907.608 0.56
692.16 0.133
631.32 0.059
356.66 0.037
6760.3 0.019
6628.5 0.030
6419.3 0.016
6355.0 0.046
6293.2 0.065
6077.87 0.35
3139.9 0.078
6018.2 0.020
5752.0 0.018
4962.84 2.35
3390.56 5.7
2972.0 0.18
2615.2 1.09
1404.967 0.60
1161.05 0.055
1/2+ 6986.097
(1/2 to 9/2−) 6761.0
(1/2 to 9/2−) 6629.43
(1/2 to 9/2−) 6419.9
(1/2 to 9/2−) 6354.89
(1/2 to 9/2−) 6293.93
1/2−,3/2− 6078.48
(1/2 to 9/2−) 6018.8
(1/2 to 9/2−) 5752.5
3/2− 4963.083
1/2− 4903.367
(1/2 to 5/2)+ 4477.60
1/2− 4189.272
3/2− 3801.948
(3/2−,5/2+) 3558.08
3/2+ 2938.65
5/2+ 2716.987
3/2− 2347.779
7/2− 1991.28
1/2+ 1572.369
3/2+ 0
35 16 S 19

^{34}S(n,γ) E=thermal 1985Ra15

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures



$^{34}S(n,\gamma)$ E=thermal 1985Ra15

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures