^{33}S(d,p) 1972Cr08,1971Va21,1963Br05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113, 1563 (2012)	28-May-2012

^{33}S target J^{π}: $3/2^{+}$.

1972Cr08: ^{33}S(d,p) E=12 MeV, 83%-enriched ^{33}S target In between thin C foils (on formvar backing). Used split-pole magnetic spectrograph and recorded spectra At ten angles from 9° to 59° with overall energy resolution of 16 keV. DWBA calculations (code DWUCK).

1971Va21: ^{33}S(d,p) E=12 MeV, 77%-enriched ^{33}S target made from mass-separated ions implanted In thin Al foil. Used split-pole magnetic spectrograph and position-sensitive detectors covering the interval 5 ° to 95° In steps of 5° to measure $\sigma(\theta)$. FWHM≥12-14 keV. DWBA calculations (code DWUCK). Given In comments are the spectroscopic factors (2J+1)S obtained from the formula: $\sigma(\theta)=1.53[(2J_f+1)/(2J_i+1)]S(\sigma_{DWBA}(THETA))$, where $\hat{J}_f$ IS THE FINAL STATE SPIN, AND $\hat{J}_i$ IS the initial state spin In ^{33}S. 1971Va21 give for the level energies the average of values measured elsewhere, replaced by evaluators with those from 1973EnVA.

1963Br05: ^{33}S(d,p) E=6 MeV, targets of natural and 25%-enriched ^{33}S In between thin Ag foils. Measured proton groups At 20°, 50°, and 90° with broad-range magnetic spectrograph and nuclear emulsions.

^{34}S Levels

E(level)	L[†]	(2J+1)S[‡]	Comments
0.0	2	1.84	E(level): observed by 1972Cr08, 1971Va21, and 1963Br05. L: 2 (1971Va21). (2J+1)S: 1.9 (1971Va21).
2122 *10*	0+2	0.52+5.28	E(level): from 1963Br05. L: 0+2 (1971Va21). (2J+1)S: 0.15+5.2 (1971Va21).
3304.9 *20*	0+2	0.64+1.44	E(level): weighted average of: 3305 *2* (1972Cr08); 3302 *10* (1963Br05). L: 0+2 (1971Va21). (2J+1)S: 0.22+1.7 (1971Va21).
3914.1 *11*			E(level): level measured by 1971Va21 (energy value from 1973EnVA).
4072.4 *13*	0+2	0.033+0.06	E(level): level measured by 1971Va21 (energy value from 1973EnVA). L,(2J+1)S: from 1971Va21.
4118 *4*	0+2	1.64+3.20	E(level): weighted average of: 4118 *4* (1972Cr08); 4120 *10* (1963Br05). L: 0+2 (1971Va21). (2J+1)S: 0.46+2.4 (1971Va21).
4627 *4*	1+3	0.84+1.84	E(level): weighted average of: 4627 *5* (1972Cr08); 4629 *10* (1963Br05). L: 1+3 (1971Va21). (2J+1)S: 0.35+1.4 (1971Va21).
4687.5 *6*			E(level): level measured by 1971Va21 (energy value from 1973EnVA).
4702? *14*			E(level): from 1963Br05.
4875.1 *6*	(1+3)	(0.01+0.3)	E(level): level measured by 1971Va21 (energy value from 1973EnVA). L,(2J+1)S: from 1971Va21.
4888 *10*	(0)	(0.08)	E(level): from 1963Br05. L,(2J+1)S: from 1971Va21.
5227 *10*			E(level): level measured by 1971Va21 (energy value from 1973EnVA).
5326 *6*	3	4.60	E(level): from 1972Cr08. L: $(1^{+})3$ (1971Va21). (2J+1)S: (0.029),2.7 (1971Va21).
5384 *5*	0	0.92	E(level): weighted average of: 5384 *6* (1972Cr08); 5384 *10* (1963Br05). L: 0+2 (1971Va21). (2J+1)S: 0.20+0.36 (1971Va21).
5683 *7*	1	2.60	E(level): from 1972Cr08. L: 1(+3) (1971Va21).
5694 *7*	3	12.48	E(level): from 1972Cr08. L: $(1^{+})3$ (1971Va21). (2J+1)S: $(1.2^{+})7.9$ (1971Va21).

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^{33}S(d,p) 1972Cr08,1971Va21,1963Br05 (continued)

^{34}S Levels (continued)

E(level)	L[†]	(2J+1)S[‡]	Comments
5758 *7*	1	1.68	E(level): from 1972Cr08. L: 1(+3) (1971Va21). (2J+1)S: 0.64(+0.62) (1971Va21).
5848 *15*			E(level): level measured by 1971Va21 (energy value from 1973EnVA).
5993 *5*			E(level): level measured by 1971Va21 (energy value from 1973EnVA).
6128			E(level): weak, from 1972Cr08; also observed by 1971Va21. Reported with No uncertainty, which was adopted by evaluators (equal to maximum In the dataset).
6174 *6*	1+3	1.00+2.84	E(level): weighted average of: 6174 *8* (1972Cr08); 6173 *10* (1963Br05).
6254 *6*	3	2.28	E(level): weighted average of: 6256 *8* (1972Cr08); 6251 *10* (1963Br05).
6345 *6*	1	0.80	E(level): weighted average of: 6346 *8* (1972Cr08); 6344 *10* (1963Br05).
6422 *8*	3	0.88	E(level): from 1972Cr08.
6482 *7*	1	3.64	E(level): weighted average of: 6483 *8* (1972Cr08); 6480 *14* (1963Br05). L: 1(+3) (1971Va21). (2J+1)S: 1.20(+0.89) (1971Va21).
6533? *15*			E(level): level measured by 1971Va21 (energy value from 1973EnVA).
6640 *7*	(3)	(6.56)	E(level): weighted average of: 6644 *9* (1972Cr08); 6634 *10* (1963Br05). L: $(1^+)3$ (1971Va21). (2J+1)S: (0.041),2.2 (1971Va21).
6690 *7*	1	1.28	E(level): weighted average of: 6690 *9* (1972Cr08); 6690 *10* (1963Br05). L: $(1^+)3$ (1971Va21).
6832 *9*	0	0.56	E(level): from 1972Cr08.
6959 *7*	1	0.84	E(level): weighted average of: 6959 *10* (1972Cr08); 6959 *10* (1963Br05).
7114 *7*	1+3	0.52+1.76	E(level): weighted average of: 7115 *10* (1972Cr08); 7112 *10* (1963Br05).
7393 *10*			E(level): weighted average of: 7388 *14* (1972Cr08); 7398 *14* (1963Br05). The 1972Cr08 energy is reported with No uncertainty, which was adopted by evaluators (equal to maximum In the dataset).
7547 *14*			E(level): weak, from 1972Cr08; reported with No uncertainty, which was adopted by evaluators (equal to maximum In the dataset).
7632 *7*	1+3	3.92,12	E(level): weighted average of: 7633 *11* (1972Cr08); 7631 *10* (1963Br05).
7659 *11*	(3)	(2.28)	E(level): from 1972Cr08.
7732 *11*	(1+3)	(0.12,0.6)	E(level): from 1972Cr08.
7753 *9*	1	0.32	E(level): weighted average of: 7755 *11* (1972Cr08); 7750 *14* (1963Br05).
7783 *9*	1	1.08	E(level): weighted average of: 7785 *11* (1972Cr08); 7783 *14* (1963Br05).
8142 *12*	1	1.04	E(level): from 1972Cr08.
8299 *14*			E(level): from 1963Br05.
8622? *14*			E(level): from 1963Br05.

[†] From 1972Cr08, except where noted otherwise.

[‡] Unless noted otherwise, the values given here are those of 1972Cr08 multiplied by a factor of 4. 1972Cr08 define spectroscopic factor as: $C^2S(2J_f+1)=[\sigma(\text{exp})(2J_i+1)]/[1.53\sigma(\text{DWBA})]$, where J_f is the final state spin and J_i is the initial state spin, $3/2^+$ In this case for ^{33}S target. According to 1972Cr08 the spectroscopic strengths were normalized In such a way that the spectroscopic factors for another reaction, ^{32}S(d,p)^{33}S, had the full single-particle value.