^{30}Si(n,γ),(n,n):resonances 2018MuZY

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 184, 29 (2022)	24-Jun-2022

2018MuZY: evaluation of neutron resonance energies, J^π values, width parameters, and resonance strengths.

Measurements:

1983Ha12: E=0.05-1.4 MeV neutron pulses from water moderated tantalum target at ORELA, Oak Ridge National Lab. Target was enriched to 95.5% in ^{30}Si. Time of flight technique for measuring the total cross section, FWHM≈1 keV.

1975Bo36: E=0.003-1.5 MeV neutron pulses at ORELA, Oak Ridge National Lab. Natural Silicon target, 92.2% ^{28}Si. Resolution≈0.5 keV.

2002Be70: E=25, 30, 52, 104, 149, 180 and 215 keV neutron beams at the Karlsruhe and Tubingen 3.75-MV Van de Graaff accelerators. Natural Si samples.

^{31}Si Levels

E(level)[†]	J^π[‡]	Γ[‡]	L[‡]	Comments
6577.09? *4*	$1/2^+$		0	E(level): fictitious level from 2018MuZY, not listed in the Adopted Levels. E(n)(lab)=−10.65 keV *3*, Γ_γ=1 eV, $g\Gamma_n^0$=2.69 eV.
6592.22 *3*	$1/2^-$	1.90 eV *7*	1	E(n)(lab)=4.977 keV *5*, $g\Gamma_n$=1.30 eV *4*, Γ_γ=0.60 eV *6*, $g\Gamma_n\Gamma_\gamma/\Gamma$=0.60 eV *6*.
6602.06 *4*				E(n)(lab)=15.14 keV *3*, $g\Gamma_n$=[5] eV, $g\Gamma_n\Gamma_\gamma/\Gamma$=0.17 eV *2*, $g\Gamma_n^0$=[0.04] eV.
6648.8				E(n)(lab)=63.43.
6765.1 *8*	$1/2^+$	11.00 keV *30*	0	E(n)(lab)=183.5 keV *8*, $g\Gamma_n$=11.00 keV *30*, Γ_γ=[6 eV], $g\Gamma_n^0$=24.5 eV *12*.
6771.8 *4*	$[3/2]^{(+)}$		(2)	E(n)(lab)=190.6 keV *4*, $g\Gamma_n$=[100] eV, Γ_γ=0.65 eV *15*, $g\Gamma_n\Gamma_\gamma/\Gamma$=1.3 eV *3*.
6815.1 *2*	$(3/2)^+$		2	E(n)(lab)=235.20 keV *24*, $g\Gamma_n$=102 eV *10*, Γ_γ=0.80 eV *15*, $g\Gamma_n\Gamma_\gamma/\Gamma$=1.6 eV *3*.
6880.6 *3*	$3/2^-$	0.260 keV *20*	1	E(n)(lab)=302.8 keV *3*, $g\Gamma_n$=520 eV *40*.
6987.4 *4*	$1/2^-$	1.31 keV *25*	1	E(n)(lab)=413.10 keV *41*, $g\Gamma_n$=1.30 keV *25*, Γ_γ=5.5 eV *8*, $g\Gamma_n\Gamma_\gamma/\Gamma$=5.5 eV *8*.
7212.2 *6*	$3/2^+,5/2^+$		2	E(n)(lab)=645.20 keV *65*, $g\Gamma_n$=450 eV *60*.
7269.9 *7*	$[3/2^+,5/2^+]$		[2]	E(n)(lab)=704.8 keV *7*, $g\Gamma_n$=0.60 keV *10*.
7309.1 *7*	$3/2^-$		1	E(n)(lab)=745.3 keV *7*, $g\Gamma_n$=15.30 keV *60*.
7359.1 *7*	$[1/2^-]$	0.86 keV *13*	[1]	E(n)(lab)=796.9 keV *7*, $g\Gamma_n$=0.86 keV *13*.
7369.3 *8*	$[1/2^-]$	0.52 keV *10*	[1]	E(n)(lab)=807.40 keV *81*, $g\Gamma_n$=0.52 keV *10*.
7372.6 *8*	$[1/2^-]$	0.60 keV *12*	[1]	E(n)(lab)=810.80 keV *81*, $g\Gamma_n$=0.60 keV *12*.
7405.2 *8*	$3/2^-$	20.8 keV *8*	1	E(n)(lab)=844.50 keV *84*, $g\Gamma_n$=10.40 keV *40*.
7438.5 *8*	$3/2^+,5/2^+$		2	E(n)(lab)=878.90 keV *88*, $g\Gamma_n$=0.60 keV *10*.
7536.0 *10*	$1/2^-$	6.0 keV *10*	1	E(n)(lab)=979.80 keV *98*, $g\Gamma_n$=6.0 keV *10*.
7732.3 *11*	$1/2^+$	7.50 keV *50*	0	E(n)(lab)=1182.2 keV *12*, $g\Gamma_n$=7.50 keV *50*.
7766.7 *12*	$3/2^+,5/2^+$	5.00 keV *50*	2	E(n)(lab)=1217.8 keV *12*, $g\Gamma_n$=5.00 keV *50*.
7822.1 *12*	$1/2^-$	7.9 keV *13*	1	E(n)(lab)=1275.0 keV *13*, $g\Gamma_n$=7.9 keV *13*.
7848.5 *13*	$[3/2^+,5/2^+]$	4.2 keV *10*	[2]	E(n)(lab)=1302.2 keV *13*, $g\Gamma_n$=4.2 keV *10*.
7856.7 *13*	$[3/2^-]$	5.0 keV *16*	[1]	E(n)(lab)=1310.7 keV *13*, $g\Gamma_n$=2.50 keV *80*.
7883.1 *13*	$1/2^-$	9.0 keV *30*	1	E(n)(lab)=1338.0 keV *13*, $g\Gamma_n$=9.0 keV *30*.
7900.6 *13*	$3/2^-$	34.4 keV *34*	1	E(n)(lab)=1356.0 keV *14*, $g\Gamma_n$=17.2 keV *17*.
7927.3 *13*	$1/2^-$	5.8 keV *20*	1	E(n)(lab)=1383.6 keV *14*, $g\Gamma_n$=5.8 keV *20*.
7944.2 *14*	$[3/2^+,5/2^+]$		[2]	E(n)(lab)=1401.0 keV *14*, $g\Gamma_n$=2.70 keV *60*.
7954.9 *14*	$[3/2^-]$	5.40 keV *12*	[1]	E(n)(lab)=1412.1 keV *14*, $g\Gamma_n$=2.70 keV *60*.

[†] From S(n)+E(n), where S(n)=6587.39 *4* (2021Wa16), and E(n)=neutron energy in the c.m. system. The papers report the lab neutron energy, and these were converted into center of mass energy. The lab neutron energies are essentially from 1983Ha12 and adopted by 2018MuZY.

[‡] From 2018MuZY, based on the same references as listed in this dataset.