^{37}Cl(n,γ),(n,n):resonances 2006MuZX,1984Ma25,1974Si25

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J^π(^{37}Cl g.s.)=3/2$^+$.

2006MuZX: compilation of thermal neutron induced σ and resonance parameter data for nuclei of Z=1-100.

1984Ma25: E=8-151 keV neutron beams were provided by the Oak Ridge Electron Linear Accelerator (ORELA). Target was a 98.21% enriched and natural samples of ^{37}Cl. Neutron energies were measured using time-of-flight with a 40-m flight path. Capture γ rays were detected by a pair of nonhydrogenous liquid scintillators. Measured yields. Deduced resonance energies, J, widths. A total of 12 resonances reported up to E_n(lab)=151 keV.

1974Si25 (also 1971SiYI): E=20-400 keV neutron beams were provided by the Columbia University Nevis synchrocyclotron. Targets were CCl_4 of natural chlorine. Neutron energies were measured using time-of-flight with a 202.05-m flight path. Deduced resonance energies, J, L(n), widths. Six resonances assigned to ^{38}Cl, other 5 resonances were seen but isotopic assignment was uncertain.

1969Al09, 1969Mo01: E=9-113 keV. Eight resonances reported. Natural target. The 16.272, 54.669, 62.468 resonances assigned to ^{37}Cl belong to ^{35}Cl (1984Ma25,1974Si25).

Others: 1957Ne23, 1956Br99, 1955To32, 1954Kr53, 1953Ki73.

^{38}Cl Levels

All resonance parameters including resonance neutron energies, J^π, L, $g\Gamma_n$ and Γ_γ are directly adopted from the compilation in 2006MuZX.

E(level)[†]	J^π[#]	$g\Gamma_n\Gamma_\gamma/\Gamma$[@]	L	E_n(lab) (keV)	Comments
6115.96 *8*	2$^+$	0.155 eV *4*	0	8.303 *5*	Additional information 1. Γ_γ=0.248 eV *6*, $g\Gamma_n$=58 eV *2*.
6132.74 *8*	1$^+$	0.17 eV *3*	0	25.580 *15*	Additional information 2. Γ_γ=0.51 eV *7*, $g\Gamma_n$=289 eV *32*.
6134.98 *8*	[0$^-$]	0.039 eV *2*	(1)	27.820 *15*	Additional information 3. (8/5)$g\Gamma_\gamma$=0.063 eV *4*. $g\Gamma_n$=2.5 eV *12* (1974Si25).
6139.22[‡] *8*			(1)	32.19 *3*	2$g\Gamma_n$=7.9 eV.
6149.14 *8*	[2$^-$]	0.058 eV *4*	(1)	42.36 *2*	2$g\Gamma_n$=0.18 eV.
6153.15 *9*	2$^+$	0.22 eV *4*	0	46.650 *24*	Additional information 4. Γ_γ=0.36 eV *6*. $g\Gamma_n$=0.27 keV *4* (1974Si25).
6158.07[‡] *8*			(1)	51.55 *3*	2$g\Gamma_n$=5.8 eV.
6161.56 *9*		0.043 eV *8*	(1)	55.15 *3*	(8/5)$g\Gamma_\gamma$=0.069 eV *13*.
6161.82 *9*		0.092 eV *17*		55.44 *3*	Additional information 5. L=1 for 55.36 (1974Si25); L=0, J=2 for 55.152 (1969Al09). (8/5)$g\Gamma_\gamma$=0.148 eV *20*. $g\Gamma_n$=74 eV *16* for 55.36+55.13 doublet (1974Si25). 1984Ma25 assign 64 eV to 55.36 and 10 eV to 55.13.
6172.83[‡] *8*	[1$^-$]		(1)	66.71 *3*	Additional information 6. (8/5)$g\Gamma_\gamma$=0.212 eV *22*. $g\Gamma_n$=33 eV *8* (1974Si25).
6172.96 *10*	[2$^-$]	0.132 eV *14*	(1)	66.84 *4*	2$g\Gamma_n$=64 eV *6*.
6191.85 *11*		0.096 eV *14*	(1)	86.21 *4*	2$g\Gamma_n$=0.83 eV.
6198.57 *11*	[2$^+$]	0.17 eV *5*	0	93.14 *5*	Additional information 7. (8/5)$g\Gamma_\gamma$=0.28 eV *8*. $g\Gamma_n$=0.40 keV *3* (1974Si25).
6203.20[‡] *10*			(1)	97.90 *5*	2$g\Gamma_n$=0.67 eV.
6219.60[‡] *10*			(1)	114.74 *6*	2$g\Gamma_n$=0.063 eV.
6229.84[‡] *10*			(1)	125.26 *6*	2$g\Gamma_n$=54.4 eV.
6230.09[‡] *10*			(1)	125.51 *6*	2$g\Gamma_n$=46 eV.
6232.3 *6*	[2$^+$]	0.22 eV *6*	(0)	127.8 *6*	Additional information 8. (8/5)$g\Gamma_\gamma$=0.36 eV *9*. $g\Gamma_n$=0.21 eV *3* (1974Si25).

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^{37}Cl(n,γ),(n,n):resonances 2006MuZX,1984Ma25,1974Si25 (continued)

^{38}Cl Levels (continued)

E(level)[†]	J^{π}[#]	$g\Gamma_n\Gamma_\gamma/\Gamma$[@]	L	E_n(lab) (keV)	Comments
6232.7[‡] *7*			(1)	128.2 *7*	$2g\Gamma_n$=27 eV.
6239.7[‡] *8*			(1)	135.4 *8*	$2g\Gamma_n$=27 eV.
6240.6[‡] *8*	[2$^+$]		(0)	136.3 *8*	$2g\Gamma_n$=1.7 keV *4*.
6247.82[‡] *12*			(1)	143.72 *8*	$2g\Gamma_n$=1.14 keV *20*.
6248.42[‡] *12*			(1)	144.34 *8*	$2g\Gamma_n$=48 eV.
6254.01[‡] *13*			(1)	150.08 *10*	$2g\Gamma_n$=67 eV.
6254.61 *14*	[2$^-$]	0.32 eV *5*	(1)	150.67 *10*	Additional information 9.
6261.29[‡] *13*			(1)	157.56 *10*	$2g\Gamma_n$=186 eV.
6268.49[‡] *13*			(1)	164.95 *10*	$2g\Gamma_n$=53.7 eV.
6269.97[‡] *13*			(1)	166.47 *10*	$2g\Gamma_n$=65 eV.
6270.78[‡] *13*			(1)	167.3 *1*	$2g\Gamma_n$=3.9 eV.
6272.39[‡] *13*			(1)	168.96 *10*	$2g\Gamma_n$=310 eV.
6279.95[‡] *13*			(1)	176.72 *10*	$2g\Gamma_n$=208 eV.
6280.82[‡] *13*			(1)	177.61 *11*	$2g\Gamma_n$=115 eV.
6283.00[‡] *14*			(1)	179.86 *12*	$2g\Gamma_n$=1.21 keV *18*.
6283.06[‡] *14*			(1)	179.91 *12*	$2g\Gamma_n$=88 eV.
6289.96[‡] *14*	[2$^+$]		(0)	187.00 *12*	$2g\Gamma_n$=386 eV.
6293.56[‡] *14*	[1$^+$]		(0)	190.70 *12*	$2g\Gamma_n$=833 eV.
6293.98[‡] *14*			(1)	191.13 *12*	$2g\Gamma_n$=138 eV.
6310.78[‡] *15*			(1)	208.38 *13*	$2g\Gamma_n$=390 eV.
6315.50[‡] *15*			(1)	213.23 *13*	$2g\Gamma_n$=19.4 eV.
6316.40[‡] *15*			(1)	214.16 *13*	$2g\Gamma_n$=68 eV.
6319.83[‡] *15*			(1)	217.68 *13*	$2g\Gamma_n$=107.8 eV.
6320.79[‡] *15*			(1)	218.66 *13*	$2g\Gamma_n$=37.8 eV.
6321.78[‡] *15*			(1)	219.68 *13*	$2g\Gamma_n$=27 eV.
6323.21[‡] *15*	[2$^+$]		(0)	221.15 *13*	$2g\Gamma_n$=81.5 eV.

[†] From E(n)(c.m.)+S(n) where S(n)=6107.88 *8* (2017Wa10) and E(n)(-c.m.) deduced from E_n(lab) in 2006MuZX.
[‡] Resonance from 2006MuZX only.
[#] L=0 gives 1$^+$ or 2$^+$ and L=1 gives 0$^-$,1$^-$,2$^-$,3$^-$, with further restriction from analysis of resonance data.
[@] g=(2J+1)/8.