

⁴²Ca(n,γ),(n,n):resonances 2006MuZX

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen [#]		NDS 126, 1 (2015)	31-Mar-2015

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

1977Mu02: E(n)>2.5 keV. Measured parameters for about 60 resonances (24 s-wave and 21 p-wave) between 9.143 keV and 229.6 keV.

1971Ch56: E(n)=10-100 keV. Measured E_γ, resonances.

1966Fa02: E(n)=30-600 keV. Measured resonances Others: 1971Ch56, 1966Go38.

⁴³Ca Levels

$$g\Gamma_n=(2J+1)\Gamma_n/2.$$

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

E(level) [†]	Γ_γ	L	E _n (lab) (keV)	Comments
7929.2?	1.06 eV	0	-3.85	
7941.82 17	0.56 eV 10	1	9.143 4	$g\Gamma_n=1.0$ eV 5.
7942.02 17	0.645 eV 80	0	9.345 4	$g\Gamma_n\Gamma_\gamma/\Gamma=0.36$ eV 4.
7951.50 17		1	19.06 1	$g\Gamma_n=3$ eV 1.
7955.07 17	0.435 eV 50	0	22.71 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.53$ eV 6.
7956.11 17		1	23.78 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.13$ eV 1.
7958.56 17	0.68 eV 10	0	26.29 1	$g\Gamma_n=20$ eV 5.
7968.85 17	0.56 eV 5	1	36.82 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.42$ eV 5.
7969.45 17	1.36 eV 15	0	37.44 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.022$ eV 4.
7972.04 17		1	40.09 1	$g\Gamma_n=3$ eV.
7977.9		0	46	$g\Gamma_n\Gamma_\gamma/\Gamma=0.56$ eV 6.
7980.00 17	0.61 eV 6	0	48.24 2	$g\Gamma_n=2$ eV.
7981.42 17		1	49.70 2	$g\Gamma_n\Gamma_\gamma/\Gamma=0.53$ eV 6.
7981.59 17	0.31 eV 5	1	49.87 2	$g\Gamma_n=1000$ eV 300.
7989.86 17	0.79 eV 8	0	58.34 2	$g\Gamma_n\Gamma_\gamma/\Gamma=0.33$ eV 4.
7991.74 17	0.8 eV 1	0	60.26 2	$g\Gamma_n=300$ eV.
7996.53 17	0.38 eV 5	0	65.17 3	$g\Gamma_n=15$ eV.
8002.06 17		1	70.83 3	$g\Gamma_n\Gamma_\gamma/\Gamma=0.59$ eV 6.
8006.39 17		1	75.27 3	$g\Gamma_n\Gamma_\gamma/\Gamma=0.15$ eV 2.
8007.56 17	1.19 eV 15	0	76.46 3	$g\Gamma_n=10$ eV.
8013.58 17	0.44 eV 5	0	82.63 4	$g\Gamma_n\Gamma_\gamma/\Gamma=0.68$ eV 7.
8014.19 17	0.5 eV 1	1	83.25 4	$g\Gamma_n=20$ eV.
8020.10 17			89.31 4	$g\Gamma_n\Gamma_\gamma/\Gamma=0.77$ eV 8.
8020.46 17			89.68 4	$g\Gamma_n=50$ eV.
8023.43 19			92.72 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.38$ eV 5.
8023.71 19			93.00 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.44$ eV 5.

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$^{42}\text{Ca}(n,\gamma),(n,n)$:resonances 2006MuZX (continued) ^{43}Ca Levels (continued)

E(level) [†]	Γ_γ	L	$E_n(\text{lab})$ (keV)	Comments
8025.53 19			94.87 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.47$ eV 6.
8028.49 19	0.98 eV 15	0	97.90 8	$g\Gamma_n=5$ eV.
8033.77 20		1	103.3 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.82$ eV 10.
8047.14 20	1.60 eV 15	0	117.0 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.40$ eV 6.
8049.19 20	0.41 eV 8	1	119.1 1	$g\Gamma_n=20$ eV.
8052.0 10	1.55 eV	0	122 1	$g\Gamma_n\Gamma_\gamma/\Gamma=1.50$ eV 15.
8055.93 20	0.70 eV 8	1	126.0 1	$g\Gamma_n=10$ eV.
8057.0 10		0	127 1	$g\Gamma_n\Gamma_\gamma/\Gamma=0.76$ eV 12.
8057.01 20		1	127.1 1	$g\Gamma_n=3750$ eV.
8057.40 20			127.5 1	$g\Gamma_n\Gamma_\gamma/\Gamma=1.55$ eV.
8058.28 20			128.4 1	$g\Gamma_n=10$ eV.
8061.0 3	0.56 eV 8	1	131.2 2	$g\Gamma_n\Gamma_\gamma/\Gamma=1.23$ eV 15.
8062.1 3		0	132.4 2	$g\Gamma_n=11000$ eV.
8066.0 3	0.41 eV 8	1	136.3 2	$g\Gamma_n\Gamma_\gamma/\Gamma=1.5$.
8073.8 3	0.94 eV 15	0	144.3 2	$g\Gamma_n\Gamma_\gamma/\Gamma=1.03$ eV 13.
8074.5 3	0.47 eV 8	1	145.1 2	$g\Gamma_n\Gamma_\gamma/\Gamma=0.72$ eV 10.
8075.4 3			146.0 2	$g\Gamma_n\Gamma_\gamma/\Gamma=1.26$ eV 15.
8078.3 3		0	148.9 2	$g\Gamma_n=5$ eV.
8081.0 3			151.6 3	$g\Gamma_n\Gamma_\gamma/\Gamma=0.50$ eV 8.
8086.0 3	1.63 eV 18	0	156.8 3	$g\Gamma_n\Gamma_\gamma/\Gamma=0.87$ eV 10.
8089.3 3			160.2 3	$g\Gamma_n=5$ eV.
8090.2 4			161.1 4	$g\Gamma_n\Gamma_\gamma/\Gamma=0.38$ eV 6.
8099.2 4			170.4 4	$g\Gamma_n=75$ eV.
8103.2 10	1.9 eV 2	0	174.4 10	$g\Gamma_n\Gamma_\gamma/\Gamma=0.93$ eV 13.
8106.0 4	1.70 eV 18	0	177.3 4	$g\Gamma_n=20$ eV.
8113.6 4			185.1 4	$g\Gamma_n\Gamma_\gamma/\Gamma=0.89$ eV 13.
8115.3 4	0.56 eV 10	0	186.8 4	$g\Gamma_n\Gamma_\gamma/\Gamma=0.67$ eV 9.
8128.2 5	1.02 eV 14		200.0 5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.44$ eV 17.
8132.8 5			204.8 5	$g\Gamma_n\Gamma_\gamma/\Gamma=0.90$ eV 12.
8134.0 5			206.0 5	$g\Gamma_n=300$ eV 50.
8138.1 5			210.2 5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.62$ eV 18.
8139.8 5	1.30 eV 18	0	211.9 5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.20$ eV 14.
8141.5 5	0.49 eV 10	1	213.7 5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.53$ eV 18.
8144.2 5			216.4 5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.15$ eV 14.
8149.0 5	0.33 eV 5	1	221.2 5	$g\Gamma_n=2500$ eV 500.
8152.2 5	0.325 eV 60	1	224.6 5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.9$ eV 2.
8157.1 5	1.08 eV 18	0	229.6 5	$g\Gamma_n=200$ eV.
8165.8		>1	238.5	$g\Gamma_n\Gamma_\gamma/\Gamma=1.69$ eV 18.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.78$ eV 11.
				$g\Gamma_n=300$ eV.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.56$ eV 10.
				$g\Gamma_n=300$ eV.
				$g\Gamma_n\Gamma_\gamma/\Gamma=1.02$ eV 14.
				$g\Gamma_n\Gamma_\gamma/\Gamma=1.25$ eV 15.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.87$ eV 11.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.40$ eV 6.
				$g\Gamma_n=1750$ eV.
				$g\Gamma_n\Gamma_\gamma/\Gamma=1.33$ eV 18.
				$g\Gamma_n=20$ eV.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.94$ eV 15.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.63$ eV 10.
				$g\Gamma_n=260$ eV.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.67$ eV 10.
				$g\Gamma_n\Gamma_\gamma/\Gamma=0.31$ eV 6.
				$g\Gamma_n=50$ eV.
				$g\Gamma_n\Gamma_\gamma/\Gamma=1.06$ eV 18.
				$g\Gamma_n=500$ eV.

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$^{42}\text{Ca}(n,\gamma),(n,n)$:resonances 2006MuZX (continued) ^{43}Ca Levels (continued)

<u>E(level)[†]</u>	<u>L</u>	<u>E_n(lab) (keV)</u>	<u>Comments</u>
8176.0	>1	249	
8181.0	1	254	$g\Gamma_n=800$ eV.
8186.3	0	259.5	$g\Gamma_n=750$ eV.
8201.0	0	274.5	$g\Gamma_n=750$ eV.
8201.4	>1	275	
8204.8	0	278.5	$g\Gamma_n=1500$ eV.
8206.8	1	280.5	$g\Gamma_n=750$ eV.
8223.0	>1	297	$g\Gamma_n=238$ eV.
8259.0	>1	334	$g\Gamma_n=460$ eV.
8263.0	>1	338	$g\Gamma_n=550$ eV.
8281.0	0	356.5	$g\Gamma_n=1500$ eV.
8302.5	>1	378.5	$g\Gamma_n=295$ eV.
8308.8	>1	385	
8323.0	0	399.5	$g\Gamma_n=500$ eV.
8341.0	0	418	$g\Gamma_n=400$ eV.
8348.0	0	425	$g\Gamma_n=300$ eV.
8367.4	>1	445	
8369.4	>1	447	$g\Gamma_n=1000$ eV.
8372.8	0	450.5	$g\Gamma_n=1750$ eV.
8399.6	0	478	$g\Gamma_n=750$ eV.
8412.8	0	491.5	$g\Gamma_n=1000$ eV.
8418.7	>1	497.5	
8430.0	>1	509	
8434.3	0	513.5	$g\Gamma_n=5500$ eV.
8452.4	0	532	$g\Gamma_n=6500$ eV.
8465.5	0	545.5	$g\Gamma_n=2000$ eV.
8474.8	0	555	$g\Gamma_n=300$ eV.
8479.7	0	560	$g\Gamma_n=500$ eV.
8484.1	>1	564.5	
8490.0	0	570.5	$g\Gamma_n=10000$ eV.
8492.0	>1	572.5	

[†] From $E_{c.m.}+S(n)$ where $S(n)=7932.89$ 17 (2012Wa38) and $E_{c.m.}$ deduced from $E_n(\text{lab})$ in 2006MuZX.