^{40}Ca(^{7}Li,^{8}Be) 1979Hu03,1979Bo13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

Includes (HI,HI+p), where HI=^{7}Li, ^{9}Be, ^{10}B, ^{11}B, ^{13}C, ^{14}C, ^{14}N, ^{15}N, ^{18}O, ^{37}Cl.

(^{7}Li,^{8}Be): 1979Hu03: E=34 MeV ^{7}Li beam was produced from the Florida State University super FN tandem Van de Graaff accelerator. Target was about 110 μg/cm^2 natural calcium (99.94% in ^{40}Ca) evaporated onto an about 30 μg/cm^2 carbon backing. Alpha particles from unstable reaction product ^{8}Be were detected in coincidence with Si(Li) detectors. Measured Eα, $\alpha\alpha$-coin, $\sigma(\theta)$. Deduced levels, J, π, spectroscopic factors from DWBA analysis. Comparisons with available data.

Other reactions:

Measured $\sigma(\theta)$ in most reactions, DWBA and/or coupled-channel analyses.

(^{9}Be,^{10}B): 1985Wi18 (E=30, 45 MeV).

(^{10}B,^{11}C): 1984Ma06 (E=31 MeV).

(^{11}B,^{12}C): 1980Ma31 (E=32, 68 MeV), 1980Gl07 (E=51.5 MeV).

(^{13}C,^{14}N): 1980Ma31(E=40, 68 MeV), 1979Bo13 (E=50 MeV), 1976Bo01 (E=60,68 MeV).

(^{14}C,^{15}N): 1984Ma06 (E=41 MeV), 1980Dr09 (E=51 MeV).

(^{14}N,^{15}O): 1979Bo13 (E=70 MeV), 1978Ku10 (E=60 MeV).

(^{15}N,^{16}O): 1979Bo13 (E=70 MeV).

(^{18}O,^{19}F): 1982Re14 (E=62 MeV), 1972Si02 (E=48 MeV).

(^{37}Cl,^{38}Ar): 1997Wi17 (E=97.3, 115 MeV).

^{39}K Levels

E(level)[†]	J$^\pi$[†]	L[#]	C^{2}S[‡]	Comments
0	3/2$^+$	1,2	3.9	C^{2}S: others: 1985Wi18 in (^{9}Be,^{10}B); 1984Ma06 in (^{10}B,^{11}C); 1980Ma31, 1980Gl07 in (^{11}B,^{12}C); 1980Ma31, 1979Bo13 in (^{13}C,^{14}N); 1984Ma06, 1980Dr09 in (^{14}C,^{15}N); 1979Bo13 in (^{14}N,^{15}O); 1979Bo13, 1978Ku10 in (^{15}N,^{16}O). Others: (^{37}Cl,^{38}Ar) (1997Wi17); (^{18}O,^{19}F) (1982Re14,1972Si02). dσ/dΩ (at 20°)=6 mb/sr (1980Dr09). Additional information 1.
2523	1/2$^+$	1	0.71	C^{2}S: others: 1985Wi18 in (^{9}Be,^{10}B); 1984Ma06 in (^{10}B,^{11}C); 1980Ma31, 1980Gl07 in (^{11}B,^{12}C); 1980Ma31, 1979Bo13 in (^{13}C,^{14}N); 1984Ma06, 1980Dr09 in (^{14}C,^{15}N); 1979Bo13 in (^{14}N,^{15}O); 1979Bo13, 1978Ku10 in (^{15}N,^{16}O). Others: (^{37}Cl,^{38}Ar) (1997Wi17); (^{18}O,^{19}F) (1982Re14,1972Si02). dσ/dΩ (at 20°)=7 mb/sr (1980Dr09). Additional information 2.
2814	7/2$^-$		0.43	C^{2}S: other: 1980Ma31 in (^{11}B,^{12}C). dσ/dΩ (at 20°)=0.6 mb/sr (1980Dr09).
3019	3/2$^-$			dσ/dΩ (at 20°)=0.15 mb/sr (1980Dr09).
3600[@]	9/2$^-$[@]			
3880[@]	(3/2$^-$,5/2$^-$)[@]			J$^\pi$: 5/2$^-$ in Adopted Levels.
4096	1/2$^+$		0.20	
5320	5/2$^+$		0.83	J$^\pi$: 3/2$^+$ in Adopted Levels.
5750	5/2$^+$		0.77	J$^\pi$: (5/2,7/2)$^+$ in Adopted Levels.
6670	5/2$^+$		1.67	J$^\pi$: 3/2$^+$,5/2$^+$ in Adopted Levels.
7470	5/2$^+$			J$^\pi$: (3/2$^-$,5/2,7/2$^+$) in Adopted Levels.

[†] From (^{7}Li,^{8}Be) (1979Hu03), except where noted.

[‡] C^{2}S=[dσ/dΩ(exp)]/[dσ/dΩ(DWBA)], from (^{7}Li,^{8}Be) (1979Hu03), no normalization used.

[#] From (^{13}C,^{14}N) (1976Bo01,1979Bo13).

[@] From 1978Ku10.