C(^{38}Ca,nγ),H(^{38}Ca,nγ)   2009AmZZ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	John Cameron, Jun Chen and Balraj Singh, Ninel Nica	NDS 113, 365 (2012)	15-Jan-2012

2009AmZZ: ^{40}Ca primary beam at 140 MeV/nucleon bombarded ^{9}BE target, fragments analyzed by A1900 separator. ^{38}Ca fragment beam bombarded a reaction target of polypropylene ([C$_3$H$_6$]$_n$) to get excitations in ^{37}Ca through one-neutron removal process. Measured Eγ, Iγ, (^{37}Ca recoil)γ-coin using SeGA array.
Additional information 1.
E(resonance) deduced in 2009AmZZ use S(p)(^{37}Ca)=3025 24 from 2003Au03. Updated and precise value of S(p) is 3007.4 9 (2011AuZZ), which would give resonance energies higher by about 18 keV.

^{37}Ca Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
0	(3/2$^+$)	J$^{\pi}$: mirror state of ^{37}Cl g.s., 3/2$^+$.
1606.4 13	1/2$^+$	
2939.0 16	(3/2$^+$,5/2$^+$)	
3103.7 16	7/2$^-$	T$_{1/2}$: estimated (by 2009AmZZ) as greater than a few picoseconds from Doppler-shift in energy between the two sets of rings in SeGA array.
		Deduced E(resonance)=106.
3354 2	(3/2$^+$,5/2$^-$)	Deduced E(resonance)=356.
3530 3	(3/2$^+$,5/2$^-$)	Deduced E(resonance)=532.
3612 4	(3/2$^+$,5/2$^-$)	Deduced E(resonance)=614.
3842 4	3/2$^+$	Deduced E(resonance)=844.

[†] Deduced by 2009AmZZ from GEANT3 response function of γ spectrum detected in SeGA array in coincidence with ^{37}Ca recoils.
[‡] Assigned by 2009AmZZ based on comparison with mirror nucleus ^{37}Cl and decay pattern. All assignments are considered tentative by the evaluators. See also arguments in Adopted Levels.

γ(^{37}Ca)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
≈1300[†]	2939.0	(3/2$^+$,5/2$^+$)			
1606.4 13	1606.4	1/2$^+$	0	(3/2$^+$)	
1750	3354	(3/2$^+$,5/2$^-$)	1606.4	1/2$^+$	
2230	3842	3/2$^+$	1606.4	1/2$^+$	2230γ observed in coin with ^{37}Ca recoils.
2939.0 16	2939.0	(3/2$^+$,5/2$^+$)	0	(3/2$^+$)	
3103.7 16	3103.7	7/2$^-$	0	(3/2$^+$)	
3354 2	3354	(3/2$^+$,5/2$^-$)	0	(3/2$^+$)	
3530 3	3530	(3/2$^+$,5/2$^-$)	0	(3/2$^+$)	
3612 4	3612	(3/2$^+$,5/2$^-$)	0	(3/2$^+$)	
3842 4	3842	3/2$^+$	0	(3/2$^+$)	

[†] Placement of transition in the level scheme is uncertain.

C(^{38}Ca,nγ),H(^{38}Ca,nγ)   **2009AmZZ**

Level Scheme

${}^{37}_{20}\text{Ca}_{17}$