Coulomb excitation 1999Pr09,2005Iw02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 114,1189 (2013)	1-Apr-2013

1999Pr09: ^{28}Ne beam was produced from a primary beam of ^{48}Ca, E=80 MeV/nucleon, fragmentation on ^{9}Be target at NSCL. Secondary beam of ^{28}Ne, E=53.0 MeV/nucleon, bombarded a ^{197}Au target, after passing ^{197}Au, ^{28}Ne beam was stopped in a cylindrical fast-slow plastic phoswich detector. Measured Eγ using NSCL NaI(Tl) detector array, deduced B(E2; $0^+_{gs} \rightarrow 2^+_1$). The E($2^+_1$) results for ^{28}Ne suggests coexisting shapes resulting from competing 0 $\hbar\omega$ and 2 $\hbar\omega$ configurations, concluded in 1999Pr09.

2005Iw02: Secondary beam of ^{28}Ne produced via fragmentation of ^{40}Ar primary beam, E=95 MeV/nucleon, on a ^{9}Be target. Fragments are separated by RIPS mass separator. Beam particle identification performed event-by-event via time-of-flight -ΔE method with two plastic scintillators and a Si detector. Secondary beam ^{28}Ne, E=46 MeV/nucleon (mid-target), bombarded lead and carbon targets. Measured Eγ, particle-γ coin with an array of 66 NaI(Tl) detectors and a Si-detector telescope. Deduced B(E2; $0^+_{gs} \rightarrow 2^+_1$). A comparison between the experimental and theoretical values of E(2^+_1) and B(E2$\uparrow$) highlights the suppressed collectivity in the $0^+_{gs} \rightarrow 2^+_1$ excitation in ^{28}Ne (2005Iw02).

^{28}Ne Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	0^+		
1296 *10*	2^+	5.7 ps *10*	B(E2)$\uparrow$=0.0132 *23* (2005Iw02) BE2=0.0269 136 (1999Pr09). E(level): From 1999Pr09. $T_{1/2}$: Using B(E2)$\uparrow$=0.0132 *23* and Adopted γ-ray properties.

$\gamma(^{28}Ne)$

E_γ	E_i(level)	J^π_i	E_f	J^π_f	Comments
1296 *10*	1296	2^+	0.0	0^+	E_γ: Weighted average of 1288 keV *12* (2005Iw02) and 1320 keV *20* (1999Pr09).

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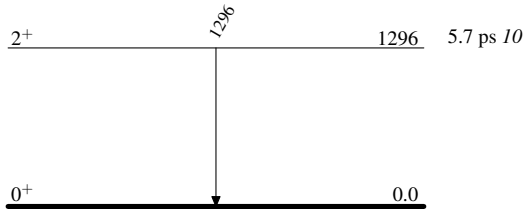
Level Scheme



$^{28}_{10}Ne_{18}$