Coulomb excitation 2002Pr09

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 199,1 (2025)	30-Sep-2024

2002Pr09: ^{197}Au(^{33}Mg,^{33}Mg′γ) E=61.8 MeV/nucleon ^{33}Mg beam was produced by fragmentation of 80 MeV/nucleon primary ^{48}Ca beam from NSCL on a 376 mg/cm^2 ^{9}Be production target. Fragments were separated by A1200 fragment separator. The secondary target was 702 mg/cm^2 ^{197}Au foil. γ rays were detected with an array of NaI(Tl) detectors surrounding the target and reaction residues were detected with a cylindrical fast/slow plastic phoswich detector. Measured Eγ, particle-γ-coin, yields. Deduced levels, J, π, B(E2), deformation parameters. Comparisons with available data.

^{33}Mg Levels

E(level)	J$^\pi$[†]	Comments
0	(5/2$^+$)	J$^\pi$: 3/2$^-$ in Adopted Levels.
485 *1*	(7/2$^+$)	E(level): This level proposed as member of 5/2$^+$ g.s. band based on analysis of E2 and E1 transition probabilities deduced from measured cross section and coupled-channel calculations. 2002Pr09 deduced charge and mass deformation parameters as β_c=0.52 *12* and β_A=0.58 *13*; and concluded that the 485 transition is probably E2. J$^\pi$: (5/2$^-$) in Adopted Levels.

[†] As proposed in 2002Pr09, based on their proposed rotational scenario for observed excitations. Adopted assignments in Adopted Levels are different and given under comments. See Adopted Levels for arguments of adopted assignments.

γ(^{33}Mg)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
485 *1*	485	(7/2$^+$)	0	(5/2$^+$)	σ=81 mb *25* for 0-2.8° (2002Pr09).

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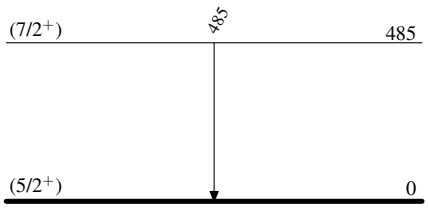
Level Scheme



$^{33}_{12}Mg_{21}$