

Coulomb excitation 2000Pr09

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

2000Pr09 (also **2002GI01**): $^{197}\text{Au}(^{33}\text{Si}, ^{33}\text{Si}'\gamma) E=40.8$ MeV/nucleon ^{33}Si beam was produced by fragmentation of a 90 MeV/nucleon ^{40}Ar primary beam from the NSCL K1200 cyclotron hitting a 564 mg/cm^2 ^9Be production target. Fragments were separated by A1200 fragment separator. The secondary target was ^{197}Au . Scattered particles were stopped and detected in a cylindrical fast/slow plastic phoswich detector and identified using time-of-flight method. γ rays were detected with an array of NaI(Tl) detectors surrounding the target. Measured E_γ , I_γ , γ -ray yields. Deduced levels, γ -ray transition strengths. Comparisons with sd-shell calculations with the USD interaction.

 ^{33}Si Levels

$E(\text{level})^\dagger$	J^π^\ddagger	Comments
0	$(3/2)^+$	
1010 7	$1/2^+$	$B(E2)^\uparrow=0.00165$ 32 (2000Pr09)
4300	$(5/2^+)$	$B(E2)^\uparrow=0.0069$ 13 (2000Pr09)

† From E_γ data.

‡ From the Adopted Levels.

 $\gamma(^{33}\text{Si})$

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
1010 7	1010	$1/2^+$	0	$(3/2)^+$	$\sigma=4.1$ mb 8 (2000Pr09).
4300	4300	$(5/2^+)$	0	$(3/2)^+$	E_γ : may also include 4231γ from ^{32}Si (2000Pr09). $\sigma=11.6$ mb 22 (2000Pr09).

Coulomb excitation 2000Pr09Level Scheme