Coulomb excitation 2004Yu11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Apr-2022

2004Yu11: intermediate energy Coulomb excitation with 84.8 MeV (77.2 MeV midtarget) ^{55}Ni beam from Coupled Cyclotron facility of NSCL-MSU and 257.7 mg/cm^2 ^{197}Au target. ^{55}Ni beam was produced in ^{9}Be(^{58}Ni,X),E=140 MeV/nucleon and separation of ions of interest using A1900 fragment separator. Scattered ^{55}Ni particles were analyzed using on an event-by-event basis with the focal plane detectors of the S800 spectrograph. Measured Eγ, Iγ, (particle)γ-coin using SeGA array of 18, thirty-two-fold segmented HPGe detectors for γ detection. Energies and J^π of low-lying levels were calculated using shell model with GXPF1 effective interaction.

^{55}Ni Levels

E(level)	J^π[†]	Comments
0	$7/2^-$	
2879 *18*	$(9/2^-,11/2^-)$	B(E2)↑=0.0251 *69* Proposed configuration=$\nu f_{7/2}^{-1}$⊗first 2^+ state of ^{56}Ni. Measured integrated Coulomb excitation cross section=57 mb *16*. B(E2)↑=0.0251 *69* for $J^\pi(2879)=11/2^-$, and 0.0257 *+95−73* for $J^\pi(2879)=9/2^-$ obtained by comparing the measured cross section section with the Alder-Winther theory of relativistic Coulomb excitation, assuming 92% of the excitation cross section is of type E2 if $J^\pi(2879)=9/2^-$, as <4.9 mb excitation cross section for pure M1 was calculated using the recommended upper limits on M1 transition rates (2004Yu11). For deexcitation of the level, a maximum contribution of 29% from E2 deexcitation transitions was calculated by the authors for $J^\pi(2879)=9/2^-$.

[†] From 2004Yu11.

γ(^{55}Ni)

E_γ	E_i(level)	J_i^π	E_f	J_f^π
2879 *18*	2879	$(9/2^-,11/2^-)$	0	$7/2^-$

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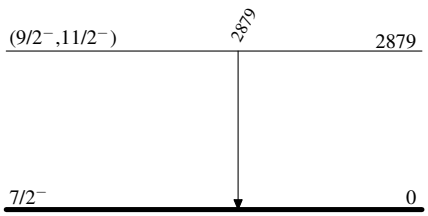
Level Scheme



$^{55}_{28}Ni_{27}$