

## Normal occupancy of deeply bound valence neutrons in $^{37}\text{Ca}$

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The ground state and first excited  $2^+$  state in proton-rich  $^{36}\text{Ca}$  have been studied at Ganil by gamma-ray spectroscopy of one-neutron knock-out reactions from deeply bound states in  $^{37}\text{Ca}$  at intermediate energy. The  $2^+$  energy in  $^{36}\text{Ca}$  was found to be consistent with a sizeable  $N=16$  gap similar to the  $Z=16$  one observed in the mirror nucleus  $^{36}\text{S}$ . Partial cross-sections and momentum distributions of the knock-out reactions to both the ground state and the first excited  $2^+$  state have been measured and the angular momentum of the two populated states identified. In contrast with previously reported cases, the extracted spectroscopic factors and their comparison to shell-model spectroscopic factors are found to be consistent with the trend observed for stable and near-magic nuclei.

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