

Spectroscopy of neutron-deficient nuclei around ^{36}Ca

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An experiment was performed to extend the knowledge of excited states in neutron-deficient Ca isotopes, and to search for the position of the proton drip-line at $Z = 20$. In particular, excited states in ^{36}Ca were searched for to obtain information on the isospin-dependence of the nucleon-nucleon-interaction near the drip-line from a comparison with its stable mirror nucleus, ^{36}S . In the experiment, from a primary ^{40}Ca beam with an energy of $95 \cdot A \text{ MeV}$ secondary beams of ^{37}Ca and ^{36}Ca were produced by fragmentation on the SISSI target at GANIL. In a secondary Be target, a variety of nuclei around $^{36,35}\text{Ca}$ has been produced by n- and p-removal at beam energies around $61 \cdot A \text{ MeV}$. The produced nuclei were identified using the spectrometer *SPEG*, and energies of prompt γ rays were measured with the *Château de Cristal*, an array of 74 BaF_2 scintillators. Besides measuring γ -ray energies, the experimental setup allows to determine spectroscopic factors and to measure momentum distributions. The energy of the first 2^+ state of ^{36}Ca has been determined, and previously unknown transitions in other nuclei have been observed. First results of the very recent experiment will be presented.