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Establishing the deformation characteristics and decay spectroscopy of ^{66}Ge

Describing rapidly evolving nuclear deformation is important for determining the true behaviour of the strong force and to create accurate macroscopic-microscopic models of the nucleus. Current models suggest a change from soft shapes through triaxial deformation in ^{66}Ge. This nucleus lies in a particularly interesting region of the nuclear chart, with neutron numbers between the two shell closures $N = 28$ and 50, but also in a position above spherical nuclei at the shell closure $Z = 28$ and below deformed Se, Kr, and Sr isotopes. It is the next even-even isotope in the germanium chain after the $N = Z$ nucleus ^{64}Ge, and therefore, measurements in ^{66}Ge are important to predict deformation in this neutron-deficient region.

The measurement of the spectroscopic quadrupole moment Q_S for the first excitation and shape coexistence in the neutron-deficient isotope of ^{66}Ge have been investigated using the ^{196}Pt(^{66}Ge,^{66}Ge)^{196}*Pt* Coulomb-excitation reaction at 4.395 MeV/u with the MINIBALL spectrometer and double-sided silicon detectors. In order to accurately determine the beam purity, the beam was implanted on an aluminium foil and let to decay. Information on the decay schemes of the daughter ^{66}Ga and grand-daughter ^{66}Zn are also studied. Progress on the analysis of the Coulomb-excitation and β-decay data sets will be presented.

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