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Lifetime measurement of the first excited 2+ state in 112Te

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In this work we present the preliminary results obtained in the experiment: The evolution of collectiv- ity near the N=Z=50 closed shell in the neutron-deficient nuclei 111I and 113I using DPUNS, performed at the Accelerator Laboratory of the University of Jyva¨skyla¨ (Finland).
The aim of the experiment has been to measure the lifetime of excited states in neutron-deficient nuclei by using the Recoil Distance Doppler Shift method (RDDS). In particular we are interested on the investigation of the shape evolution in Te isotopes performed through the determination of the reduced transition probability. The states have been populated through a fusion-evaporation reaction between a 58Ni beam of 250 MeV energy and a 58Ni target of 1 mg/cm2. The target was mounted together with a Mg degrader foil of 1.2 mg/cm2 thickness in a compact Plunger device, DPUNS, provided by the University of Manchester. Fusion-evaporation products were separated in-flight from fission products using the RITU gas-filled recoil separator and implanted at the focal plane of the GREAT spectrometer. Prompt gamma-rays were detected at the target position by the JUROGAM-2 array consisting of 15 tapered and 24 clover Ge detectors distributed in four rings at different angles with respect to the beam direction. This combined setup together with the Recoil-Decay Tagging (RDT) technique leads an unique opportunity for studying this neutron-deficient region of the nuclear chart.
The results of the work will be discussed in detail at the talk.

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