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Measurements of transition probabilities with JUROGAM and MINIBALL

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The region of the nuclear chart around neutron-deficient Pb nuclei is of great interest in modern nuclear structure physics as intriguing phenomena such as coexistence of multiple shapes have been observed. The relation between these configurations and fundamental nucleon-nucleon interactions can be studied in detail by measuring transition probabilities between the coexisting structures. In nuclei close to the Z=82 shell gap and the neutron mid shell at N=104, large valence neutron space together with the relatively small proton shell gap provides us with an excellent laboratory for such studies [1,2].

Recoil distance Doppler-shift lifetime measurements have been carried out in the neutron-deficient Hg[3], Pb[4] and Po[4,5] nuclei close to the neutron mid shell at the Accelerator Laboratory of the University of Jyväskylä utilising the JUROGAM γ-ray spectrometer, the Köln plunger device and the RITU gas-filled recoil separator together with the selective tagging methods. Complementary Coulomb excitation measurements of neutron-deficient Pb beams in inverse kinematics have been carried out at ISOLDE at CERN utilising the MINIBALL γ-ray spectrometer. Experimental methods and the results of these studies will be discussed.

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Primary author: GRAHN, Tuomas (University of Jyväskylä)

Presenter: GRAHN, Tuomas (University of Jyväskylä)

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