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Nuclear moment studies in transfer reactions with the ORGAM spectrometer

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Experiments to study nuclear moments in single and multi-nucleon transfer reactions have been carried out at the Tandem-ALTO facility of Orsay using the ORGAM spectrometer. Quadrupole moment measurement of the 6- isomeric state in ^{66}Cu has been measured in a single nucleon transfer on a Cu_2O host. As this state results from a weak coupling between the $\pi p_{3/2}$ and the $\nu g_{9/2}$ orbitals, leading to sizable deformation at oblate and prolate shapes in the ^{68}Ni region, we have observed the interplay between these two different deformation-driving orbitals [1].

Furthermore, we have investigated the possibility of using multi-nucleon transfer reactions for the population and nuclear moment studies of isomeric states in ^{66}Cu and ^{63}Ni [2].

These studies could not only serve as a base for the determination of the unknown electric-field gradient of Cu in Zn e.g. via a quadrupole moment measurement, but would also allow the determination of the nuclear-spin orientation in these reactions. Therefore, investigations of this type open possibilities to employ nuclear moment measurements and transfer reactions to both on the neutron-deficient and neutron-rich side of the nuclear chart.

[1] R. Lozeva et al, Phys. Lett. B 694 (2011) 316–321

[2] R. Lozeva et al, AIP Conf. Proc. 1224 (2010) p.143-150

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