Contribution ID: **10** Type: **not specified**

Evolution of the shell structure in the region of neutron-rich Ti isotopes

Studies of neutron rich Ti isotopes are of particular interest for an understanding of the shell structure in the Ti-Cr-Fe region beyond N=28. Existing experimental data on first 2+ states in N=32 isotones suggest a phase transition from predominant collective structures in 58Fe towards a neutron subshell closure developing for decreasing number of protons in the f7/2 orbital, i.e., from 56Cr to 52Ca, due to the weakening of the monopole interaction between the proton f7/2 and neutron f5/2 orbitals. However, state-of-the-art shell model calculations and a beyond mean field approach are not able to satisfactorily describe the observed staggering of B(E2) values from the first 2+ state to the ground state in neutron-rich Ti isotopes.
Therefore, we performed an experiment with the recoil distance Doppler-shift method with AGATA coupled to VAMOS at GANIL to determine transition strengths between the lowest exited excited states in neutron-rich 54Ti and neighboring odd-A nuclei for the first time. The progress of the data analysis will be discussed and first preliminary results will be shown. Special respect is paid to beam induced target modifications that appeared during the experiment and the intricate work to determine absolute distances between target and degrader in spite of these problems. Finally, we will explain these effects as resulting from crystal damages caused by the 238U beam also relevant for future experiments with similar conditions.

Primary author: FRANSEN, Christoph (Institut für Kernphysik, Universität zu Köln, Cologne, Germany)

Co-authors: NAVIN, Alahari (GANIL, France); DEWALD, Alfred (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); GOLDKUHLE, Alina (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); VOGT, Andreas (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); BLAZHEV, Andrey (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); LEMASSON, Antoine (GANIL, France); BIRKENBACH, Benedikt (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); JACQUOT, Bertrand (GANIL, France); MICHELAGNOLI, Caterina (GANIL, France); MÜLLER-GATERMANN, Claus (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); HENRICH, Corinna (Institut für Kernphysik, TU Darmstadt, Germany); NAPOLI, Daniel (Dipartimento di Fisica dell' Universita and INFN, Sezione di Padova, Padova, Italy); CULLEN, David (University of York, UK); WÖLK, Dorothea (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); CLEMENT, Emmanuel (GANIL, France); DE FRANCE, Gilles (GANIL, France); LI, Hongji (GANIL, France); JOLIE, Jan (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); GOUPIL, Johan (GANIL, France); LITZINGER, Julia (Institut für

Kernphysik, Universität zu Köln, Cologne, Germany); ZELL, Karl Oskar (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); BECKERS, Marcel (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); REJMUND, Maurycy (GANIL, France); REITER, Peter (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); PERES-VIDAL, Rosa (GANIL, France); BONDILI, S. Nara Singh (University of Manchester, UK); LENZI, Silvia (Dipartimento di Fisica dell' Universita and INFN, Sezione di Padova, Padova, Italy); ILIEVA, Stoyanka (Institut für Kernphysik, TU Darmstadt, Germany); BRAUNROTH, Thomas (Institut für Kernphysik, Universität zu Köln, Cologne, Germany); KRÖLL, Thorsten (Institut für Kernphysik, TU Darmstadt, Germany)

Presenter: FRANSEN, Christoph (Institut für Kernphysik, Universität zu Köln, Cologne, Germany)