Contribution ID: **15** Type: **not specified**

Single-particle and collective structure of neutron-rich N=40 nuclei

Thursday, 11 April 2019 16:30 (15 minutes)

The increase in collectivity in neutron-rich isotopes around N=40 has been attributed to the enhanced occupation of neutron intruder orbitals from above N=40 [1]. At the center of this island of inversion lies 64Cr. We propose to measure neutron and proton knockout from 64Cr to quantify the neutron g9/2 and d5/2 intruder orbital occupations. The proton knockout will yield the relative location of the f and p proton states which drive the evolution of collectivity in this region. Spectroscopic factors will be compared to state-of-the art shell model calculations.
In parallel, lifetimes of excited states will be measured using the line-shape method. The same experimental technique has been applied already to 66Fe at NSCL employing GRETINA [2]. The extracted transition strength will shed light on the evolution of collectivity at N=40.
The expected level density in 63Cr and 63V is high requiring the use of a high resolution gamma-ray spectrometer for the in-beam spectroscopy. Few states are known in 63Cr from beta decay [3], no excited state is established in 63V. A recent decay experiment at RIBF found no isomeric states in either nuclei [4] thus isomer tagging is not required for the experiment.

[1] S. M. Lenzi et al., Phys. Rev. C 82 (2010) 054301
[2] K. Wimmer et al., to be published.
[3] S. Suchyta et al., Phys. Rev. C 89 (2014) 034317.
[4] K. Wimmer et al., Phys. Lett. B 792 (2019) 16.

Primary author: WIMMER, Kathrin (The University of Tokyo)

Presenter: WIMMER, Kathrin (The University of Tokyo)

Session Classification: Proposals