Contribution ID: **194** Type: **Parallel Talk**

Intermediate-energy Coulomb excitation of ^{77}Cu

Friday 27 October 2017 13:55 (25 minutes)

The present experimental study on ^{77}Cu has been carried out at Radioactive Ion Beam Factory of the RIKEN Nishina Center. It will complement the previous study of ^{77}Cu via beta decay of ^{77}Ni where the low-lying states in ^{77}Cu were identified as particle-core excitations through the comparison to the large scale Monte Carlo Shell Model calculations (E. Sahin et al. Phys.Rev.Lett. 118, 242502 (2017)). An almost unique way to characterize the states predicted as collective in the calculations is to measure the transition probabilities, i.e. B(E2) strengths. Hence the following Coulomb excitation experiment was performed to study the collective properties of low-lying states in ^{77}Cu. The characterization of such states and in particular the mixing of both collective and single-particle configurations will provide significant information on the shell structure close to ^{78}Ni. A Coulomb excitation measurement of the states due to the proton-core excitations in the case of ^{77}Cu nucleus will also provide an estimation of the collectivity of the 2^+ state in th even-even ^{76}Ni "core". Exotic secondary beam particles were produced by induced fission of the ^{238}U beam on a 3 mm thick ^{9}Be target. The uranium beam was accelerated to an energy of 345 MeV/nuclen with an average beam intensity of 20 pnA. Fission products were selected and transported by the BigRIPS fragment separator. Coulomb excitation of the fragments was performed on a 900 mg/cm^2 thick ^{197}Au target, mounted in front of the Zero Degree Spectrometer. The DALI2 NaI array was used to detect de-excitation gamma ray measured in coincidence with beam-like particles identified in the Zero Degree Spectrometer (ZDS). The experimental techniques and results will be discussed in the present contribution.

Author: Dr SAHIN, Eda (University of Oslo, Norway.)

Presenter: Dr SAHIN, Eda (University of Oslo, Norway.)

Session Classification: Parallel Sessions - NUC

Track Classification: Nuclear Structure, Nuclear Reactions and Exotic Nuclei