Contribution ID: **80** Type: **Contributed Oral/Poster**

Nuclear structure study for the neutron-rich nuclei beyond ^{132}Sn

Monday, 11 July 2016 17:35 (20 minutes)

The properties of the nuclei with a few valence particles and/or holes outside of a doubly magic nucleus are essential in the fundamental understanding of nuclear physics. In particular, the exotic nuclei around ^{132}Sn have received much attention because ^{132}Sn is doubly magic while lying far away from the line of β stability. It thus provide a pivotal area to explore the possible modification in the nuclear structure towards the neutron-drip line. However, the experimental knowledge on the spectroscopic information for the nuclei located beyond ^{132}Sn is very limited because of the difficulty in access to this region experimentally.

Aiming at investigating the possible structural changes in this region, we have studied the first 2^+ (2_1^+) states in the neutron-rich nuclei ^{136}Sn and ^{132}Cd at the RI Beam Factory. The observed 2_1^+ state in ^{132}Cd provides the first spectroscopic information southeast of ^{132}Sn. One experimental challenge is the difficulty in the access to these two exotic nuclei. This experiment employed one- and two-proton removal reactions following the in-flight fission of primary U beam to produce ^{136}Sn and ^{132}Cd. The 2_1^+ states in ^{136}Sn and ^{132}Cd were identified by measuring γ rays in coincidence with these reactions. The secondary beams were produced in the BigRIPS separator and the reaction residues were analyzed by the ZeroDegree spectrometer. Gamma rays emitted from the excited states were measured via the DALI2 spectrometer. In the presentation, the new results on the 2_1^+ states in ^{136}Sn and ^{132}Cd will be discussed and experimental details will be given.

Primary author: Dr WANG, He (RIKEN Nishina Center)

Presenter: Dr WANG, He (RIKEN Nishina Center)

Track Classification: Shell evolution through direct reactions - Spectroscopy of nuclear levels and nuclear shapes through direct reactions