



Contribution ID: 46

Type: **not specified**

NEDA

Thursday, 30 June 2016 12:20 (20 minutes)

One of the possible methods of studying yrast and yrare states of extremely neutron deficient nuclei is by using heavy-ion induced fusion-evaporation reactions. In such experiments, the nuclei of interest are produced with very low cross sections, therefore clean reaction channel selection is essential. State-of-the-art gamma spectrometers coupled to high performing ancillary detectors are the key instruments to study the nuclear structure of this neutron deficient $N \sim Z$ nuclei. The most exotic (and the most interesting) reaction channels are almost always associated with the emission of neutrons, two or more. Currently, a new neutron multiplicity filter named NEDA (NEutron Detector Array) is being constructed for this purpose. NEDA will operate with germanium arrays (AGATA, GALILEO, EXOGAM) on both intense stable and radioactive ion beams. This will enable to investigate the structure of exotic neutron-deficient nuclei, which were not experimentally achievable so far. The efficiencies of clean identification of $2n$ and $3n$ reaction channels are expected to be a few times higher for NEDA with respect to existing arrays.

The findings from the R&D phase and the status of the NEDA project will be presented. This involves results of Geant4 simulations on optimal single detector size, scintillator materials and geometry of the whole array. The results of measurements with the prototype and first NEDA detectors will be presented. Comparison between analog and digital procedures for the neutron-gamma discrimination and timing will also be discussed.

Primary author: JAWORSKI, Grzegorz (LNL)

Presenter: JAWORSKI, Grzegorz (LNL)

Session Classification: Perspectives in Nuclear Structure II