



# The 568th Nuclear Science Seminar

Dr. Yassid Ayyad Limonge  
(NSCL, Michigan State University)

## **Direct and resonant reactions with active targets**

April 28th, 2016 (Thu) 16:00-17:00

Room 309, Faculty of Science Build 1,  
Hongo campus, the University of Tokyo

Active targets are versatile devices well adapted for reactions with the most exotic beam species, providing high luminosity without loss of resolution. Particles detected inside the detector gas volume are tracked and reconstructed with high efficiency. The Active Target Time Projection Chamber (AT-TPC) and MAIKo detectors are novel active targets particularly designed for performing direct and resonant reactions with the radioactive beams available in the NSCL/FRIB and the RCNP facilities within an energy range of around 5 to 100A MeV. While these two active targets provide a similar functionality, their complementary detection scheme and geometry make them suitable for a wide range of nuclear reactions. In this work we will discuss the experimental program regarding direct and resonant reactions for the AT-TPC and MAIKo active targets. In particular, the AT-TPC has proven to be very successful in determining exotic cluster structures in  $^{10}\text{Be}$ ,  $^{14}\text{C}$  and  $^{12}\text{Be}$  as well as in investigating isobaric analog states in  $^{47}\text{K}$ . The current scientific program will involve reactions of astrophysical interests, 2-proton radioactivity and the measurement of fission barriers of neutron deficient nuclei. In the case of the MAIKo detector, an experimental program for transfer and inelastic scattering reactions at the RCNP has been proposed. Current results and future perspectives will be presented in this seminar.

*Nuclear Science Seminar (NSS)*

*Web: <http://nucl.phys.s.u-tokyo.ac.jp/nex/seminar.html>*

*Email: [nss@nucl.phys.s.u-tokyo.ac.jp](mailto:nss@nucl.phys.s.u-tokyo.ac.jp)*