

# RCNP NUCLEAR PHYSICS EXPERIMENT SEMINAR

- Title Measurement of the GT strength distribution in  $^{46}\text{Sc}$  via the ( $t, ^3\text{He}+\text{gamma}$ ) reactions on  $^{46}\text{Ti}$
- Speaker Dr. NOJI Shumpei  
(Michigan State University, National Superconducting Cyclotron Laboratory)
- Date and Time 12th March (Wed) 2014, 13:30PM-
- Place Arata hall, JWRI Osaka University  
Access map: <http://www.jwri.osaka-u.ac.jp/access.html>

## Abstract:

Stellar electron capture (EC) reactions of *pf*-shell nuclei play an important role in pre-supernova stellar evolution and crustal heating of neutron stars. Astrophysical models show clear sensitivity to the details of the Gamow-Teller (GT) strength distributions, which have been extensively studied by means of charge-exchange reactions.

In the present work, we measured the GT strength distributions in one of the lightest *pf*-shell nuclei  $^{46}\text{Sc}$  via the ( $t, ^3\text{He}+\text{gamma}$ ) reaction on a stable  $^{46}\text{Ti}$  stationary target at  $E_t = 115$  MeV/nucleon using the GRETINA gamma-ray tracking array and the S800 spectrometer at the NSCL. Coincidence measurement with de-excitation gamma rays from the residual nuclei allowed us to study the detailed structure of low-lying GT strength, which is of particular importance for astrophysical applications. In this seminar, I would like to present some results from the experiment and compare them to theoretical calculations.

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