



Contribution ID: 26

Type: poster

New method of measuring low-energy (a,p) reactions in inverse kinematics

Wednesday, 23 May 2018 16:30 (1h 30m)

Because of the astrophysical importance of measuring numerous (alpha,p) reactions for explosive nucleosynthesis, we have developed a new approach using heavy ion beams incident on a windowless helium gas target and have measured the $4\text{He}(^{19}\text{F},^{1}\text{H})^{22}\text{Ne}$ reaction as a first demonstration. ^{19}F beams were produced at the Holifield Radioactive Ion Beam Facility (HRIBF) at Oak Ridge National Laboratory (ORNL) and bombarded a large scattering chamber filled with helium gas. Using a newly built gas recirculator system, a windowless gas target was maintained at a constant gas pressure of 9 Torr. Recoiling protons from the reactions were detected by a large area annular silicon strip detector array (SIDAR) which was configured in dE-E telescope mode. We measured the $^{19}\text{F}(\text{a,p})$ and $^{19}\text{F}(\text{a,p}')$ excitation functions over the energy range of $E_{\text{c.m.}} \sim 1.96\text{-}2.1$ MeV. Details of the experiment and future plans will be presented.

*This work was supported by the National Research Foundation of Korea(NRF) and the US Department of Energy.

Primary author: CHAE, Kyungyuk (Sungkyunkwan University)

Co-authors: AYRES, A. (University of Tennessee, Knoxville); BEY, A. (University of Tennessee, Knoxville); MOAZEN, B. H. (Louisiana State University); NESARAJA, C. D. (Oak Ridge National Laboratory); BARDAYAN, Dan (University of Notre Dame); JONES, K. L. (University of Tennessee, Knoxville); HOWARD, M. E. (Rutgers University); MATOS, M. (Louisiana State University); SMITH, M. S. (Oak Ridge National Laboratory); Dr O'MALLEY, Patrick (University of Notre Dame); KOZUB, R. L. (Tennessee Technological University); PITTMAN, S. T. (University of Tennessee, Knoxville); Dr AHN, Sunghoon (Tony) (JINA/NSCL); GREIFE, U. (Colorado School of Mines); PETERS, W. A. (Oak Ridge Associated Universities)

Presenter: CHAE, Kyungyuk (Sungkyunkwan University)

Session Classification: Poster Session