Contribution ID: **24** Type: **Nuclear Structure**

Charge Changing Cross Section Measurements of Carbon Isotopes at the Neutron-drip Line

Wednesday, 16 February 2022 08:36 (12 minutes)

Exotic features like halo and the disappearance of the magic numbers were revealed by investigating the nuclei towards the neutron-rich region resulting from the large neutron/proton asymmetry. The halo occurrence in the neutron-rich nuclei originates due to a large spatial extension of the density of the outermost neutrons. The proton radius is an important property to understand the influence of significantly large spatial extension of the neutron wavefunction on the protons of the core nucleus. ^{22}C is a two neutron halo with a ^{20}C core, identified at the dripline. The systematic study of the evolution of proton radii together with the matter radii for the carbon isotopes will allow characterizing the two-neutron halo formation in ^{22}C and the shell evolution of these drip-line carbon isotopes. The presentation will describe the experiment, discuss the analysis and report the first measurement of charge changing cross-section (σ_{cc}) of the neutron drip-line carbon isotopes ^{20}C and ^{22}C at 345A MeV with a carbon target at RIKEN. The proton radii will be extracted from the measured σ_{cc} using the finite range Glauber model framework.

email address

pranav.subramaniam@gmail.com

Please select: Experiment or Theory

Experiment

Primary authors: SUBRAMANIYAM, P. (Saint Mary's University); KANUNGO, R. (Saint Mary's University/TRIUMF); BAGCHI, S. (Saint Mary's University/GSI/Justus-Liebig University); TANAKA, Y. K. (Saint Mary's University/GSI/Justus-Liebig University); GEISSEL, H. (GSI, Darmstadt, Germany); DOORNENBAL, P. (Riken Nishina Center, Saitama, Japan); AHN, D.S. (Riken Nishina Center, Saitama, Japan); BABA, H. (Riken Nishina Center, Saitama, Japan); BEHR, K. (GSI, Darmstadt, Germany); BROWNE, F. (Riken Nishina Center, Saitama, Japan); CHEN, S. (Riken Nishina Center, Saitama, Japan); Dr CORTES, M .L.; ESTRADE, A.; FUKUDA, N. (Riken Nishina Center, Saitama, Japan); HOLL, M. (Saint Mary's University/TRIUMF); ITAHASHI, K. (Riken Nishina Center, Saitama, Japan); IWASA, N. (Tohoku University); KAUR, S. (Saint Mary's/Dalhousie University); MATSUMOTO, S. Y. (Kyoto University); MOMIYAMA, S. (University of Tokyo); MURRAY, I. (Riken Nishina Center/Universite Paris-Saclay); NAKAMURA, T. (Tokyo Institute of Technology); ONG, H. J. (Osaka University); PASCHALIS, S. (University of York); PROCHAZKA, A. (GSI, Darmstadt, Germany); SCHEIDENBERGER, C. (GSI/Justus-Liebig University); SCHROCK, P. (University of Tokyo); SHIMUZU, Y. (Riken Nishina Center, Saitama, Japan); STEPPENBACK, D. (Riken Nishina Center/University of Tokyo); SUZUKI, D. (Riken Nishina Center, Saitama, Japan); SUZUKI, H. (Riken Nishina Center, Saitama, Japan); TAKECHI, M. (Niigata University); TAKEDA, H. (Riken Nishina Center, Saitama, Japan); TAKEUCHI, S. (Tokyo Institute of Technology); TANIUCHI, R. (University of Tokyo/University of York); WIMMER, K. (University of Tokyo); YOSHIDA, K. (Riken Nishina Center, Saitama, Japan)

Presenter: SUBRAMANIYAM, P. (Saint Mary's University)

Session Classification: Nuclear Physics / Nuclear Astrophysics / Gravitational Waves