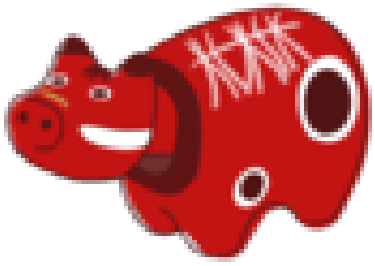

Contribution ID: **44** Type: **not specified**

Measurement of Interaction Cross Sections through the TRIP-S3CAN Project at RIKEN RIBF

Tuesday, 4 March 2025 13:50 (20 minutes)

The nuclear matter radius is one of the fundamental physical quantities, and the interaction cross section measurement is a method used to deduce this radius. Measurement of interaction cross sections using the transmission method achieves an accuracy of 0.5% with statistics from only 10^5 to 10^6 particles, owing to the large cross section and the ability to use thick targets. This corresponds to a nuclear radius determination accuracy of approximately 0.01–0.03 fm. The ability to determine radii with relatively high precision from a limited number of events makes this method applicable to unstable nuclei far from the stability line, enabling simultaneous measurement of over a dozen nuclei within a single cocktail beam. To extend these measurements to a broad range of nuclei, the S3CAN (Symbiotic Systematic and Simultaneous Cross-section Measurements for All over the Nuclear Chart) experiments have been launched.
In the 2024 fiscal year, we successfully measured the interaction cross sections of approximately 150 nuclides within 48 hours as part of this project. While each result will be detailed in poster presentations by the co-authors, this presentation will provide an overview of the experimental methodology for cross-section measurements, recent progress, and future plans.

Type of contribution

poster

Are you a student or postdoc?

no

Primary author: NISHIMURA, Daiki (Tokyo City Univercity)

Co-authors: MORIGUCHI, Tetsuaki (Univ. of Tsukuba); TANAKA, Masaomi (Kyushu Univ.); Ms INOUE, Chinami (Tokyo City Univerisity); Mr MATSUYAMA, Kento (Tokyo City University); TAGUCHI, Ryo (Depertment of Physics, Osaka University); TAKAYAMA, Gen (Osaka Univ.); YANO, Asahi (Univ. of Tsukuba); Mr ADACHI, Kazuhiro (Niigata University); Ms AMITANI, Mei (Tokyo City Univerisyt); Dr BABA, Hidetada (RIKEN Nishina Center); FUKUDA, Mitsunori; Dr FUKUDA, Naoki (RIKEN Nishina Center); FUKUSHIMA, Chihaya (Tokyo City University); FUKUTOME, Miki (Osaka University); Dr ICHINOHE, Yuto (RIKEN Nishina Center); ISHITANI, Soshi (Osaka University); Ms ITO, Nao (Tokyo City University); Ms KAGEYAMA, Rinon (Tokyo City Univeisity); Mr KIKUCHI, Yuta (Saitama University); KITAGAWA, Naoyuki; Mr KOBAYASHI, Hayato (Univiersity of Tsukuba); Dr KUSAKA, Kensuke (RIKEN Nishina Center); Dr MICHIMASA, Shin'ichiro (RIKEN Nishina Center); MIHARA, Mototsugu (Osaka University); Ms MIKAWA, Misaki (University of Tsukuba); Mr MITSUI, Maoto (University of Tsukuba); Mr NAKAMURA, Yuki (Tokyo City Univerisyt); Mr NISHIZAWA, Satoru (Saitama University); Dr OHTAKE, Masao (RIKEN Nishina Center); OHTSUBO, Takashi (Niigata Univ.); OZAWA, Akira

(Univ. of Tsukuba); Ms SASAMORI, Rena (Niigata University); Mr SHIMAMURA, Toshiya (Niigata University); Dr SHIMIZU, Yohei (RIKEN Nishina Center); Dr SUZUKI, Hiroshi (RIKEN Nishina Center); Dr TAKEDA, Hiroyuki (RIKEN Nishina Center); Mr TAKIURA, Kazuki (Saitama University); Mr TEZUKA, Koki (Niigata University); TOGANO, Yasuhiro; Mr TOMIOKA, Nao (Saitama University); Mr TSUJISAKA, Tasuku (Osaka University); Mr WATANABE, Kohei (Saitama University); YAMAGUCHI, Takayuki (Saitama Univ.); Dr YANAGISAWA, Yoshiyuki (RIKEN Nishina Center); Mr YASUDA, Keigo (Osaka University); Dr YOSHIMOTO, Masahiro (RIKEN Nishina Center); Mr ZHANG, Hanbin (University of Tsukuba); COLLABORATION, for TRIP-S3CAN

Presenter: NISHIMURA, Daiki (Tokyo City Univercity)

Session Classification: Session #2