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Exploring the reaction 64-Ni + 238-U at RITU

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Multi-nucleon transfer (MNT) reactions have shown promising tool to produce exotic nuclei and probe the reaction mechanisms that govern nuclear matter under extreme conditions [1].

The gas-filled recoil separator RITU [2] at Jyväskylä Accelerator Laboratory, enables the study of a fraction of transfer products emitted close to zero degrees from the beam. By combining RITU [3] detector array, transfer products can be identified through their prompt γ-ray emissions at the target position coinciding with recoil detection at the focal plane of RITU. This setup provides direct insights into the reaction mechanisms, facilitating the study of kinematics and the determination of differential cross-sections.

In this presentation, I will discuss an experiment involving the reaction ^{64}Ni + ^{238}U, conducted at energies near the Coulomb barrier. In this energy regime, many transfer products are expected to be emitted in the forward direction at small angles. I will present an overview of the technique, the experimental setup, and the current status of the analysis, including the different strategies for identifying the MNT products.

References
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Primary author: CIPAGAUTA MORA, Jennifer Brigitte

Co-authors: ILLANA, A. (Complutense University of Madrid, Spain); KANKAINEN, A. (University of Jyväskylä); MCCARTER, A. (University of Liverpool); UUSIKYLÄ, E. (University of Jyväskylä); GIACOPPO, F. (GSI Helmholtzzentrum für Schwerionenforschung, Germany); CHADDERTON, J. (University of Liverpool); PAKARINEN, J. (university of Jyväskylä); SARÉN, J. (University of Jyväskylä); UUSITALO, J. (University of Jyväskylä); EVEN, Julia (University of Groningen); AURANEN, K. (University of Jyväskylä); BELIUSKINA, O. (University of Jyväskylä); RAHKILA, P. (University of Jyväskylä); RUOTSALAINEN, P. (University of Jyväskylä); HEINZ, S. (GSI Helmholtzzentrum für Schwerionenforschung, Germany); LANDSMAN, W. N. (University of Jyväskylä)

Presenter: CIPAGAUTA MORA, Jennifer Brigitte

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