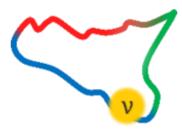
WORKSHOP: Multi-Aspect Young-ORiented Advanced Neutrino Academy (MAYORANA) - International Workshop



Contribution ID: 11 Type: not specified

Study of the 20Ne + 130Te system in a multi-channel approach within the NUMEN project

Thursday, 13 July 2023 10:20 (20 minutes)

The NUMEN project [1-2] aims to investigate specific heavy—ion double charge exchange (DCE) reactions in order to provide experimentally driven information about nuclear matrix elements (NMEs) of interest in the context of neutrinoless double beta decay $(0\nu\beta\beta)$. To this extent, the 20 Ne + 130 Te system was experimentally investigated in a multi-channel approach by measuring the complete net of reaction channels, namely DCE [3], single charge exchange (SCE), elastic and inelastic scattering [4], one–and two–nucleon transfer reactions, characterized by the same initial state interaction. The goal of such a study is to fully characterize the properties of the nuclear wavefunctions entering in the $0\nu\beta\beta$ decay NMEs. The relevant experimental campaign was carried out at INFN–Laboratory Nazionali del Sud (LNS) in Catania using the Superconducting Cyclotron to accelerate the beams and the MAGNEX magnetic spectrometer [5] to detect the reaction ejectiles. The experimental challenges and the obtained results for the 20 Ne + 130 Te system will be presented and discussed.

- [1] F. Cappuzzello et al., Eur. Phys. J. A 54, 72 (2018).
- [2] F. Cappuzzello et al., Prog. Part. Nucl. Phys. 128, 103999 (2023).
- [3] V. Soukeras et al., Results in Physics 28, 104691 (2021).
- [4] D. Carbone et al., Universe 7, 58 (2021).
- [5] F. Cappuzzello et al., Eur. Phys. J. A 52, 167 (2016).

Primary author: Dr SOUKERAS, Vasileios (Dipartimento di Fisica e Astronomia "Ettore Majorana" and Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali del Sud, Catania, Italy)

Co-author: NUMEN COLLABORATION, for the

Presenter: Dr SOUKERAS, Vasileios (Dipartimento di Fisica e Astronomia "Ettore Majorana" and Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali del Sud, Catania, Italy)

Session Classification: Oral contributions