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ISOLTRAP in 2023: Masses, Molecules, and Future Developments

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Since ISOLDE's return to science in 2021, the ISOLTRAP mass spectrometer has mainly focused on mass measurements of rare isotopes for the study of nuclear structure near doubly-magic nuclei and acted as one of the key tools in the development of various radioactive molecule beams, identifying hundreds of different ions and molecules from different target and ions source combinations.
In this contribution, key scientific achievements of the last three years will be presented, focusing on shape coexistence near the doubly-magic nuclei 78Ni [1] and shell evolution near 100Sn [2-4]. This will be followed by an overview of beam composition studies for target and ion source developments and for the production of medical isotopes. Finally, technical improvements and an outlook for the next two years until the Long Shutdown 3 will be given.
[1] Nies, Dao, Kankainen, Lunney, Nowacki et al., submitted
[2] Mougeot et al., Nature Physics 17, p. 1099–1103 (2021)
[3] Nies et al., PRL 131, 022502 (2023)
[4] Lange et al., in preparation and Nies et al., in preparation

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