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MATS and LaSpec: Status and first experiments

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The high production yields expected at the future Facility for Antiprotons and Ion Research (FAIR) will allow precision experiments on very exotic nuclei with the advanced trapping system MATS, for the measurements of atomic masses and nuclear-decay schemes, and with LaSpec, for precision collinear laser spectroscopy of ions and atoms. MATS and LaSpec, designed since 2010 [1], will be located at the end of the Low Energy Branch (LEB) of the Super-FRagment Separator (Super-FRS). First-stage prototypes of both experiments have been installed at the TRIGA research reactor at Mainz Unversity [2]. In 2014, first off-line results with trans-uranium isotopes have been obtained with the MATS prototype for the first stage [3] and with praseodym and calcium at LaSpec. Both prototypes can be transferred to FAIR allowing to perform measurements in the first phase of the project, provided the LEB of the Super-FRS and the ion-catcher to thermalize the ions are in operation. In this contribution, the status of MATS and LaSpec together with potential nuclei to be studied initially at FAIR will be presented. Other on-going developments carried out within these international collaborations in order to extend the applicability of traps and lasers in subsequent phases of FAIR will be also shown.

[1] D. Rodríguez et al., Eur. Phys. J. ST 183 (2010) 1-123
[2] J. Ketelaer et al., Nucl. Instrum. Methods A 594 (2008) 162-177
[3] M. Eibach et al., Phys. Rev. C 89 (2014) 064318

Primary author: RODRIGUEZ, Daniel (U Granada)

Presenter: RODRIGUEZ, Daniel (U Granada)

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