

The HIE-ISOLDE Project *

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Forty years after ISOLDE started operation at CERN in 1967 it is still today the leading ISOL facility in terms of the variety of extracted radioactive beams. An overview of the activities at the present implementation of the facility can be found in [1]. An increasingly important component during the last years has been the REX-ISOLDE post-accelerator [2] that presently can accelerate most ion beams produced at ISOLDE up to a maximum energy of 3 MeV/u.

The HIE-ISOLDE project includes several important upgrades of the present facility. The different parts of the projects are to a large extent independent of each other, which allows for a natural staging of the project. The existing normal-conducting post-accelerator will be extended with an intermediate step with acceleration to 5.5 MeV/u and the final objective being to provide radioactive beams up to 10 MeV/u. For the extension superconducting technology will be used. The low energy stage of REX will also be upgraded to increase the efficiency and throughput of the accelerator.

The beam quality will be improved in several respects: through the installation of an RFQ cooler, a new Resonant Laser Ionization System and a renovated High Resolution Mass Separator. Combined with the continuing target and ion source developments this will provide significant improvements for experiments and give a total of more than 1000 different ISOL beams for experiments. (Most of these will be available as post-accelerated beams as well.)

Finally, the driver beam intensity will be increased, at first due to a faster cycling of the PS Booster accelerator, at a later stage due to the new injector accelerator Linac-4. The target design will be adapted to accommodate this higher intensity.

A detailed description of the technical design can be found in [3] and more details are available through a web-site [4]. Several parts of the project are already fully funded and construction work has started. The total time duration of the project is expected to be 2007-2012.

The presentation will focus on the technical improvements and give an overview of the present stage of the project, but will also present selected examples of the physics possibilities that will emerge as the different parts of the project are implemented.

* Presented on behalf of the ISOLDE Upgrade Group, the ISOLDE AB and PH groups and the ISOLDE Collaboration.

[1] <http://cern.ch/isolde>

[2] *The REX-ISOLDE facility: Design and Commissioning Report*, eds J. Cederkall, F. Ames, T. Sieber, F. Wenander (CERN, Geneva, 2005) report CERN-2005-009

[3] *HIE-ISOLDE: the technical options*, eds M. Lindroos, T. Nilsson (CERN, Geneva, 2006) report CERN-2006-013

[4] <http://cern.ch/hie-isolde>