The ILIAS project for selective isobar suppression by Laser photodetachment

VERA Laboratory, Faculty of Physics, University of Vienna, Austria

At the VERA Laboratory of the University of Vienna a test facility for studying selective isobar suppression of negative ions by Laser photodetachment is currently under construction. The ILIAS (Ion Laser InterAction Setup) test setup consists of a negative ion spectrometer providing mass separated beams of negatively charged atomic or molecular ions with energies up to 30 keV. The negative ions are produced in a Middleton type cesium sputter ion source. After mass selection the ions are stopped in a gas-filled radio frequency quadrupole cooler where they overlap with a strong continuous wave Laser beam. By careful selection of the photon energy only unwanted isobars are neutralized while the ions of interest remain. With this scheme a selective suppression of isobars can be achieved.

After a description of the setup and a status report of the commissioning of the negative ion spectrometer, the progress of the construction of the RFQ cooler will be presented. As a future outlook the first photodetachment experiments with the RFQ cooler and a possible scheme for application of this new method to a 3 MV AMS facility will be described.