

Precision mass measurements for nuclear and neutrino physics studies as well as for tests of fundamental symmetries

Klaus Blaum¹

¹Max-Planck-Institut für Kernphysik, Heidelberg, Germany

This review provides an overview on the latest achievements and future perspectives of Penning-trap mass spectrometry on short-lived radioactive as well as stable nuclides with applications in nuclear structure, neutrino physics, and most recently even in dark matter searches where relative mass uncertainties at the level of 10^{-11} and below are required. Rapidly developing neutrino physics has found in Penning-trap mass spectrometry a staunch ally in investigating and contributing to a variety of fundamental problems. The most familiar are the absolute neutrino mass and the possible existence of resonant neutrinoless double-electron capture / double-beta decay. In addition, the most stringent test of CPT symmetry in the baryonic sector by mass comparison of the antiproton with H^- will be presented.

Presenter(s) : Prof. BLAUM, Klaus (Max-Planck-Institut für Kernphysik, Heidelberg, Germany)