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Precision mass measurements for nuclear and neutrino physics studies

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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 and of keV-sterile neutrinos. This review provides an overview on the latest achievements and future perspectives of Penning-trap mass spectrometry on short-lived 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.

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