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Nuclear mass measurements for nucleosynthesis studies at ISOLTRAP

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In 2007 the mass measurements at the tandem Penning trap mass spectrometer ISOLTRAP focussed on nuclear structure and nucleosynthesis studies. The masses of about 20 nuclides have been measured with relative mass uncertainties as low as 1*10-8. The beam times were dedicated to the mass determination of neutron deficient and neutron rich nuclides relevant for the investigation of the rp- and r-process, respectively. For neutron-deficient Cd isotopes, close to the doubly magic 100Sn and the end-point region of the rp-process, the first direct mass measurement of 99Cd was performed, giving accurate data at the neutron shell closure N=50. Furthermore, measurements aimed at the masses of neutron-rich Ag and Cd nuclides which will give input values for astrophysics calculations for the r-process, especially at the waiting point 130Cd.

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