

Commissioning of MAGNEX large-acceptance spectrometer

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The MAGNEX large-acceptance spectrometer¹ has recently been commissioned with beams from the LNS Tandem. MAGNEX has been designed particularly for RNBs from the EXCYT facility at the LNS. The spectrometer relies partly on hardware (especially the shape of the entrance and exit dipole pole tips) and partly on software (ray reconstruction) to overcome the strong aberrations inherent in the 50-msr acceptance. The magnetic elements – Quadrupole, Dipole, α - and β -surface coils – and the optics in general, were tested with elastically scattered ¹⁶O beams with slit and pepperpot apertures mounted after the target. The results of these tests will be presented. The software reconstruction has so far used inverse-matrices based on the calculated fields². However, the complicated 3D-interpolation of the maps of the measured fields is now finished and we are ready to use these in the reconstruction process.

A demonstration of the particle identification capabilities of the PSD start detector and the focal plane detector³ was given by a measurement of the ¹⁹F(⁷Li, ⁷Be)¹⁹O charge exchange reaction at $25 \pm 5^\circ$, using the full acceptance of the spectrometer. The charge state distribution of ⁴⁸Ti ions scattered at 120 MeV was also measured and found to be in good agreement with the predictions of INTENSITY⁴.

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