

Neutron polarimetry and measurement of the neutron electric form factor

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Abstract

The elastic form factors of the nucleon are fundamentally important quantities for understanding the nucleon's internal structure. The neutron electric form factor, G_{En} , is difficult to access in electron scattering experiments, because free neutron targets do not exist, and the cross section is dominated by the magnetic form factor.

Coincidence experiments of the reaction $D(\vec{e}, e'\vec{n})p$ with polarised electron beam and recoil neutron polarimetry allow to extract the form factor ratio G_{En}/G_{Mn} in a model-independent way with significantly improved precision.

At the Mainz Microtron MAMI, a new neutron polarimeter has been constructed in the A1 Collaboration. The measurement principle and first results will be presented.