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Form Factor and Proton Radius at MAMI and with ISR experiments

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An overview of the form factor programme of the A1 Collaboration at MAMI is given. Results on the electromagnetic form factors of the proton measured with elastic electron scattering at four-momentum transfers Q2 between 0.003 and 1 GeV2/c2 are reported, which allow an extraction of the electric and magnetic radii and a determination of the two-photon exchange correction. The analysis of proton data taken at Q2 up to 2 GeV2/c2 as well as the analysis of deuteron data are ongoing. A novel technique to measure the electric form factor of the proton at very low Q2 using initial state radiation (ISR) is presented and first results from a pilot experiment are reported. Future plans at Mainz include an ISR measurement with a new gas jet target and a new experiment to measure the neutron electric form factor.

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