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Recent Results and Future Plans from the A4 Experiment

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— In the A4 experiment at the MAMI facility in Mainz, Germany, we use the parity-violating asymmetry present in the scattering of longitudinally polarized electrons from unpolarized protons or deuterons to measure the strangeness contribution to the electromagnetic form factors of the nucleon. The A4 experiment uses a PbF_2 calorimeter that can be positioned in the forward or backward direction to measure the electrons scattered in a liquid hydrogen or deuterium target. Recent results for the proton at a momentum transfer $Q^2 = 0.23 \text{ GeV}^2/c^2$ and the ongoing analysis of the data at $Q^2 = 0.61 \text{ GeV}^2/c^2$ will be discussed. Future plans include the measurement of the strangeness form factor at $Q^2 = 0.1 \text{ GeV}^2/c^2$ with the current detector to a twice higher precision than the currently available data, and a high precision measurement at an even lower Q^2 with an upgraded polarimeter and detector.

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