

EM formfactors and OLYMPUS

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Collaboration

OLYMPUS

Abstract content

The elastic form factors characterize the distributions of charge and magnetization in momentum space and are important input for calculations of strong interaction phenomena and nuclear structure. The dramatic discrepancy in the observed ratio of elastic proton form factors between the Rosenbluth separation and polarization transfer methods has invoked numerous theoretical and experimental investigations. The previously neglected effect from two-photon exchange has become the favored explanation for the discrepancy. While the effect can not be calculated from first principles, it can be verified experimentally in several ways, most stringently by comparing the positron-proton and electron-proton elastic cross sections. The OLYMPUS experiment at DESY has been carried out to quantify the effect of two-photon exchange using intense stored positron and electron beams along with an internal unpolarized hydrogen target and a large acceptance detector to measure the ratio of the positron-proton and electron-proton elastic scattering cross sections. I will present the status of form factor measurements and of the experimental efforts to verify the effect of two-photon exchange, with some emphasis on the OLYMPUS experiment.

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