

Deeply Virtual Compton Scattering off ^4He : Toward the 3D Tomography of the Atomic Nuclei

Wednesday, 27 September 2017 09:00 (25 minutes)

We will report on the first measurement of the beam-spin asymmetry in the exclusive process of coherent deeply virtual Compton scattering off a nucleus. The experiment used the 6 GeV electron beam from the CEBAF accelerator at

Jefferson Lab incident on a pressurized ^4He gaseous target placed in front of the CEBAF Large Acceptance Spectrometer (CLAS). The scattered electron was detected by CLAS and the photon by a dedicated electromagnetic calorimeter at forward angles. To ensure the exclusivity of the process, a specially designed radial time projection

chamber was used to detect the recoiling ^4He nuclei. We measured beam-spin asymmetries larger than those observed on the free proton in the same kinematic domain. From these, we were able to extract, in a model-independent way, the real and imaginary parts of the only ^4He Compton form factor, $calH_A$. We will conclude with our prospects to extend this experiment at JLab 12 GeV to access both quarks and gluons distributions in the nucleus.

Primary author: DUPRE, Raphael (IPN Orsay)

Presenter: DUPRE, Raphael (IPN Orsay)

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