Deeply virtual Compton scattering with polarized positrons : perspectives for Jefferson Lab (Silvia Niccolai, for the Jefferson Lab Positron Working Group, IJCLab Orsay)

Positron beams play a crucial role in the experimental programs of the next generation of lepton accelerators. In the context of the hadron-physics program of Jefferson Lab (JLab), positron beams are complementary to electron beams in the quest for a precise understanding of the structure of nucleons. In particular, the deeply-virtual scattering of polarized and unpolarized electrons and positrons allows unambiguous separation of the different contributions to the cross section of the leptoproduction of photons and of lepton pairs, enabling an accurate determination of the nucleons' Generalized Parton Distributions (GPDs).

This talk will present the experimental program, proposed for JLab, to measure deeply virtual Compton Scattering (DVCS, $eN \rightarrow eN\gamma$), on both the proton and the neutron, with the CLAS12 spectrometer and polarized positron and electron beams of 10.6 GeV. The proposed measurement of Double Deeply Virtual Compton Scattering (DDVCS) with the SOLID spectrometer will also be presented. These experimental configurations will provide a direct access to the real parts of combinations of Compton Form Factors (CFFs), which are, in turn, connected to GPDs. The combination of DVCS observables on neutron and proton targets is a necessary step to perform the flavor decomposition of the real parts of the H and E CFFs. DDVCS will provide the unique possibility to disentangle the x (average momentum fraction carried by the initial-final quark) dependence of the CFFs.