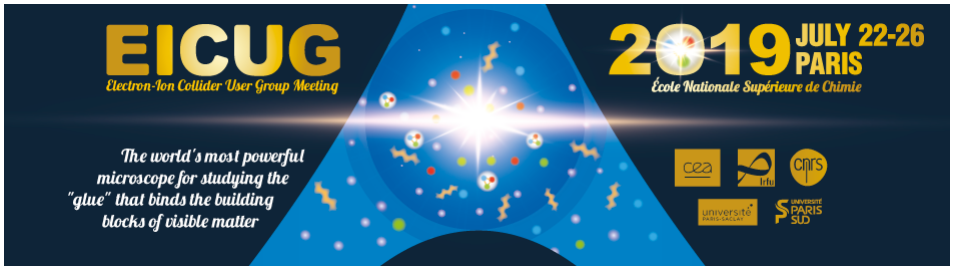

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Deeply Virtual Compton Scattering off 4He

jeudi 25 juillet 2019 09:18 (15 minutes)

In recent years it has become clear that inclusive Deep Inelastic Scattering does not allow to answer a few fundamental questions about the nuclear partonic structure, such the EMC effect. These difficulties will be overcome going beyond inclusive processes, in a new generation of experiments at high energy and high luminosity [1]. Deeply Virtual Compton Scattering (DVCS) is a very promising direction and the first experimental data have become available recently at Jlab, using the ^{4}He target, separating the coherent and incoherent channels of the process [2]. We studied the handbag contribution to coherent DVCS off the 4He nucleus in impulse approximation [3]. Within this scenario, a convolution formula for the only leading twist Generalized Parton Distribution (GPD) describing the ^{4}He partonic structure is derived in terms of the non-diagonal nuclear spectral function of ^{4}He and on the GPD of the struck nucleon. A model for the off-diagonal spectral function, based on the momentum distribution corresponding to the Argonne 18 nucleon-nucleon interaction, is used in the actual calculation together with a well known model as far as it concerns the nucleonic GPD [4]. Then, the numerical results of this approach are compared with the experimental data recently published by the EG6 experiment at the Jefferson Laboratory (Jlab) [2], showing an overall good agreement. On the light of this comparison, one can conclude that the description of the present data does not require exotic arguments, such as dynamical off-shellness or non-nucleonic degrees of freedom. More refined nuclear calculations, necessary for the expected improved accuracy of the next generation of experiments at the Jefferson Laboratory, with the 12 GeV electron beam and high luminosity, and at the future electron-ion collider, both in the coherent and incoherent channels, will be addressed.

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