

Meson Structure Function through Tagged Deep Inelastic Scattering

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The internal structure of the Nucleon has been studied for more than 60 years providing a very good understanding of its dynamics. On the other hand, the internal structure of the pion, which is in principle the simplest QCD bound state, is less explored, and its Parton distribution functions less known. Nevertheless, the presence of a virtual meson-cloud surrounding the Nucleon has been successful to explain the deviation of the Gottfried sum rule and implying the possibility of using the cloud as a virtual target, thus accessing pion structure through the Sullivan process (electron scattering off the nucleon meson cloud). Making use of the tagging technique (measuring one or more of the recoil nucleons in coincidence with the scatter electron) allows to isolate the Sullivan process from competing reactions.

The Tagged Deep Inelastic Scattering (TDIS) experiment at Hall A at the Jefferson Laboratory will make use of the Sullivan process to access the pion structure function, tagging the leading nucleon of the reaction with a new state-of-the-art multi time projection chamber in conjunction with the new Super Bigbite Spectrometer for electron detection. This talk will present the motivation and present status of the experiment.