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Di-jets the Path to the (un)polarized Partonic Photon Structure at an EIC

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In electron-proton collisions, the incoming electron is coupled directly to a parton of the proton with the exchange of a virtual photon, which has properties close to a real photon when the transfer momentum is small. In QCD, the exchanged physical photon can be approximated as a superposition of the bare photon state (direct process) and the hadronic photon state (resolved process). We discuss how the measurement of dijets can be utilized to separate these two types of processes. Measuring di-jets in quasi-real photoproduction events, one can effectively access the underlying parton structure of the exchanged photons.

The unpolarized photon PDFs can be extracted with high precision from the di-jet cross section. It will be shown that the polarized PDFs for photons can for the first time be extracted by measuring the double spin asymmetry as function of x_{γ} and x_{γ} method is used to probe the flavor of the parton content experimentally. In addition, we will discuss the effects of the underlying event on these measurements.

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