

Diffractive longitudinal structure function at the Electron Ion Collider

Tuesday 3 May 2022 11:30 (20 minutes)

Possibilities for the measurement of the longitudinal structure function in diffraction FDL at the future US Electron Ion Collider are investigated. The sensitivity to FDL arises from the variation of the reduced diffractive cross section with centre-of-mass energy. Simulations are performed with various sets of beam energy combinations and for different assumptions on the precision of the diffractive cross section measurements. Scenarios compatible with current EIC performance expectations lead to an unprecedented precision on FDL at the 5-10 % level in the best measured regions. While scenarios with data at a larger number of centre-of-mass energies allow the extraction of FDL in the widest kinematic domain and with the smallest uncertainties, even the more conservative assumptions lead to precise measurements. The ratio RD of photoabsorption cross sections for longitudinally to transversely polarised photons can also be obtained with high precision using a separate extraction method.

Submitted on behalf of a Collaboration?

No

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Session Classification: WG2: Small-x, Diffraction and Vector Mesons

Track Classification: WG2: Small-x, Diffraction and Vector Mesons