



Contribution ID: 72

Type: Oral presentation

PDF in PDFs from Lattice Formulation

Tuesday, 27 July 2021 14:15 (15 minutes)

Parton degrees of freedom (PDF) are classified in the Euclidean path-integral formulation of the hadronic tensor in QCD. They include the valence and connected sea partons, the connected sea antipartons, and the disconnected sea partons and antipartons. These degrees of freedom are shown to be the same as those from the quasi-PDF, pseudo-PDF and lattice cross section approaches on the lattice.

It is advocated that the connected sea and the disconnected sea should be separated in the global analysis of the PDFs. This allows a direct comparison of moments of PDF with the individual lattice matrix elements for the u, d, and s partons in the connected and disconnected insertions respectively.

In view of the above classification in QCD, the separation of the connected and disconnected sea partons is accommodated with the CT18 parametrization of the global analysis of the parton distribution functions (PDFs). This is achieved with the help of the distinct small x behaviors of these two sea partons and the constraint from the lattice calculation of the ratio of the strange momentum fraction to that of the \bar{u} or \bar{d} in the disconnected insertion.

Primary author: LIU, Kehfei

Presenter: LIU, Kehfei

Session Classification: Hadron Structure

Track Classification: Hadron Structure