



Contribution ID: 152

Type: Oral presentation

The lower moments of nucleon structure functions in lattice QCD with physical quark masses

Monday, 26 July 2021 21:00 (15 minutes)

We will present the current status of nucleon structure studies with physical light quarks ($m_\pi = 135$ MeV) in a large spatial extent of about 10 fm. Our calculations are carried out with the PACS10 gauge configurations generated by the PACS Collaboration with the stout-smearred $O(a)$ improved Wilson fermions and Iwasaki gauge action at $\beta=1.82$ corresponding to the lattice spacing of 0.084 fm. In this talk, we mainly focus on the lower moments of nucleon structure functions that are known as quark momentum and helicity fractions respectively, which are regarded as bench marks on lattice calculations of parton distribution functions. In addition, we will present the preliminary results with another PACS10 ensemble generated at finer lattice spacing.

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Session Classification: Hadron Structure

Track Classification: Hadron Structure