



Contribution ID: 16

Type: **not specified**

Systematic Uncertainties from Gribov Copies in Lattice Calculation of Quasi-distributions in the Coulomb gauge

Wednesday 14 August 2024 09:00 (20 minutes)

Recently, it is proposed to compute Parton distribution in fixed Coulomb gauge without Wilson line, which could greatly improve the efficiency of lattice calculations. However, there are some concerns about the systematic uncertainties from Gribov copies, which correspond to the ambiguity in the nonperturbative gauge fixing, is not controlled. This work gives an assessment on the systematic uncertainties in the lattice QCD calculation of quasi-distributions from Gribov copies in the Coulomb gauge. We tested two different strategies for choosing Gribov copies in the calculation of pion quasi-PDF and quark spatial propagators, the systematic uncertainties from Gribov copies are not significant compared with the statistical uncertainties.

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Session Classification: Presentations