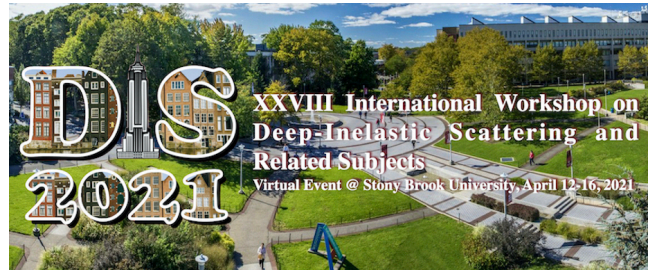


XXVIII International Workshop on Deep-Inelastic Scattering and Related Subjects



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Renormalization of Quasi-Light-Front Correlators on Lattice

Wednesday, 14 April 2021 09:30 (18 minutes)

In large-momentum effective theory, renormalization of the Euclidean operators in lattice regularization is a challenge due to the linear divergences in the self-energy of Wilson lines.

Based on the Lattice QCD matrix elements of the quasi-PDF operator at $a = 0.03\text{fm} \sim 0.12\text{fm}$ with clover and overlap valence quarks on staggered and domain-wall sea, we design a strategy to disentangle the divergent renormalization factors from finite physics matrix elements

which can be matched to a continuum scheme at short distance such as dimensional regularization and minimal subtraction. Our results

indicate that the renormalization factors are universal in the chiral fermion formalism but not in the clover case. However, the physical

matrix elements appear independent of the valence fermion formulations.

These conclusions remain valid after applying HYP smearing when the reductions of statistical errors are needed but a strict renormalization procedure becomes less clear.

Moreover, we find a large non-perturbative effect in the popular RI/MOM and ratio renormalization scheme used previously, which supports the hybrid renormalization procedure proposed recently.

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