Contribution ID: **584** Type: **Contributed Talk**

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= 0.03fm $\sim$ 0.12 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.

Primary authors: Mr HUO, Yi-Kai (Columbia University); Mr SU, Yushan (University of Maryland, College Park); Prof. GUI, Long-Cheng (Hunan Normal University); Prof. JI, Xiangdong (University of Maryland, College Park); LI, Yuan-Yuan (Nanjing Normal University); SCHAFER, Andreas (Regensburg University); SCHLEMMER, Maximilian (University of Regensburg); Prof. SUN, Peng (Nanjing Normal University); Prof. YANG, Yi-Bo (Chinese Academy of Sciences); Prof. ZHANG, Jian-Hui (Beijing Normal University); ZHANG, Kuan (University of Chinese Academy of Sciences)

Presenter: Mr SU, Yushan (University of Maryland, College Park)

Session Classification: Structure function and parton densities

Track Classification: Structure Functions and Parton Densities