Theory and computation highlights in September, 2022
(Contribution to the Director's Monthly Report to JSABOD)

October 7, 2022

JLab members, David Dean, Robert Edwards and Amber Boehnlein, recently organized a Town Hall meeting that will provide input into the planning process for the next DOE/NP Long Range Plan. An output of this meeting is recommendations for support of computational nuclear physics techniques within the community.

Transverse momentum dependent parton distribution functions (TMDPDFs) play a crucial role in characterizing the three-dimensional structure of hadrons. Based on perturbative calculations of gluon unpolarized and helicity TMDPDFs, a new paper [arXiv:2209.05443] presents a factorization formula connecting these to their large-momentum effective theory counterparts, where the latter are renormalized in a scheme facilitating lattice calculations and converted to the MS-bar scheme. This new work offers guidance for the extraction of gluon TMDPDFs from future lattice simulations within the quasi-PDF approach.