Report from #124 session of CPM

Lattice Gauge Theory for High Energy Physics

CONVENERS

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Lattice Field Theory

Venn diagram

- Hadron structure and spectroscopy (14 LoI)
- Fundamental Symmetries (7 LoI)
- Light and heavy flavor physics (12 LoI)
- v-Nucleus scattering (7 LoI)
- BSM with LGT Composite Higgs (6 LoI)
- Hamiltonian simulation and sign problem (5 LoI)
- Computation and algorithms: (8 LoI)
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- EF
- RF
- CompF
- TF
- NF

Wagman
• Two body current effects are essential for reproducing $\nu A$ scattering data in shallow inelastic region.
• Neutrino-nucleus cross sections factorize into lepton and hadron tensors. Hadron tensor calculations require inverse Laplace transform of LQCD 4pt functions.

Constraints on two-body axial currents obtained by matching LQCD and EFT calculations in a box with a background axial field

$$ic_{pp\to np}(3S_1) = \text{Short-distance QCD physics}$$

$$\mathcal{M}_{pp\to np}(3S_1) = gA(1 + S) - L_{1A}$$

Used for exploratory LQCD determination of $L_{1A}$, Savage et al [NPLQCD], PRL 119 (2017)

• Describing nA scattering from the Standard Model requires control of QCD over a wide range of scales and physics processes.