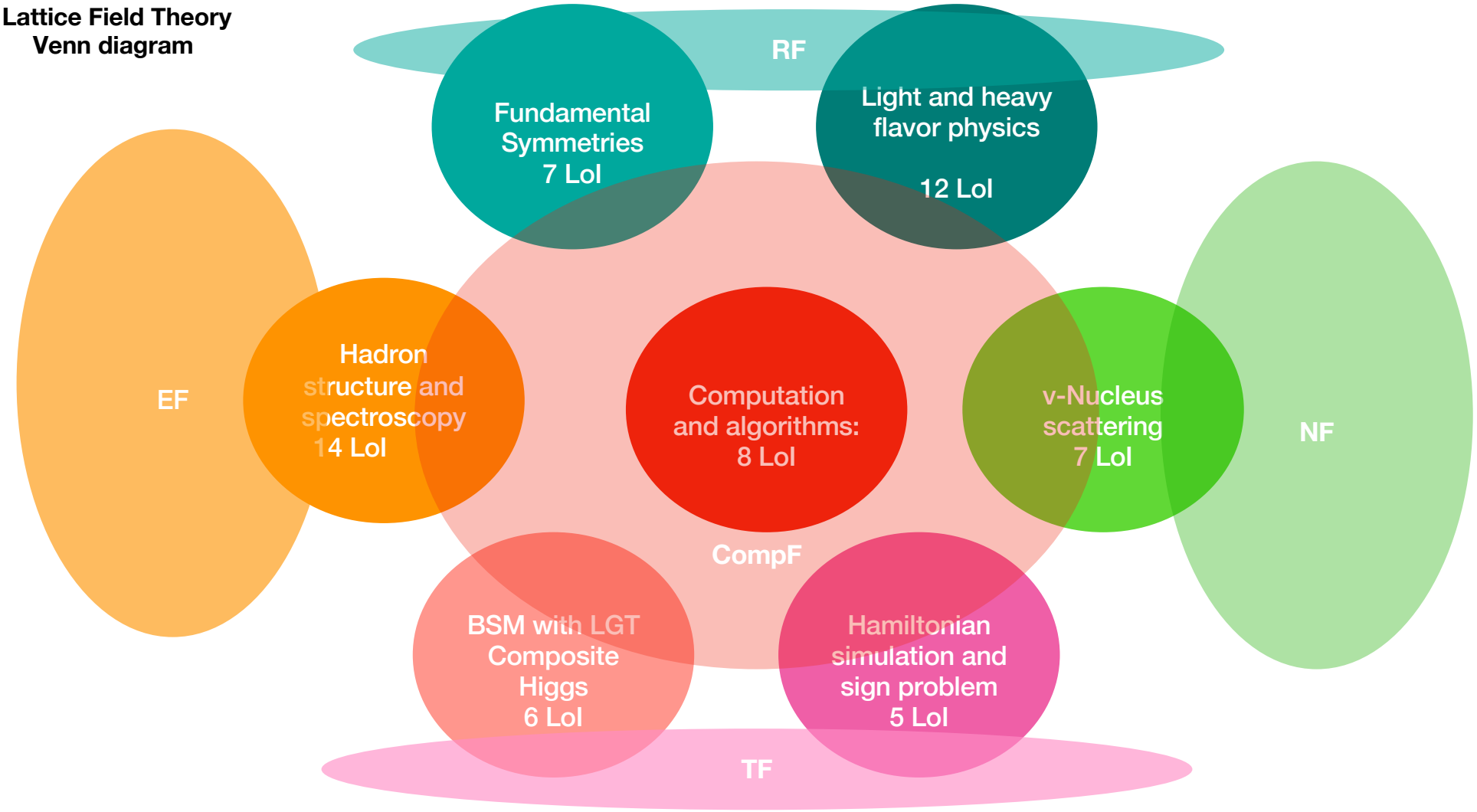
Report from #124 session of CPM

Lattice Gauge Theory for High Energy Physics

CONVENERS

Michael Schmitt (EF05, Northwestern University)
Stefan Meinel (RF01University of Arizona)
Zohreh Davoudi (TF05, University of Maryland)
Huey-Wen Lin (EF06, MSU)
Peter Boyle (CompF2, Brookhaven National Laboratory)
Ethan Neil (TF05, University of Colorado, Boulder)
Tanmoy Bhattacharya (RF03, Los Alamos National Laboratory)
Baha Balantekin (NF06, University of Wisconsin)
Taku Izubuchi (TF05, Brookhaven National Laboratory)
Thomas Blum (RF03University of Connecticut)

Lattice Field Theory
Venn diagram



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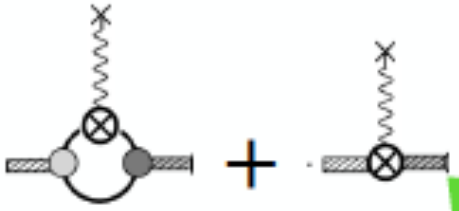
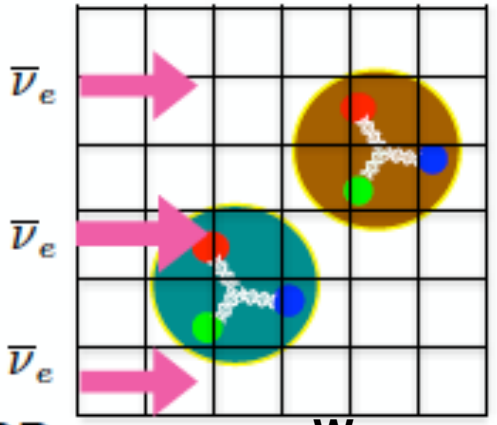
- Two body current effects are essential for reproducing νA scattering data in shallow inelastic region.
- Neutrino-nucleus cross sections factorize into lepton and hadron tensors. Hadron tensor calculations require inverse Laplace transform of LQCD 4pt functions.

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

$$iC_{pp\to np(^3S_1)} =$$ 

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

Short-distance QCD physics



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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.