

Contribution ID: 427

Type: Poster

Exploring gauge-fixing conditions with gradient-based optimization

Tuesday, 30 July 2024 17:15 (1 hour)

Lattice gauge fixing is necessary to compute gauge-variant quantities, for example those used in RI-MOM renormalization. Recently, gauge-variant observables have also been found to be more amenable to signal-to-noise optimization using contour deformations. These applications motivate systematic parameterization and exploration of gauge-fixing schemes. This work introduces a differentiable parameterization which is broad enough to cover Landau gauge, Coulomb gauge, and maximal tree gauges. The adjoint state method allows gradient-based optimization to select gauge-fixing schemes that minimize an arbitrary target loss function.

Primary authors: DETMOLD, William (MIT); KANWAR, Gurtej (University of Bern); Dr LIN, Yin (MIT); SHANA-HAN, Phiala (Massachusetts Institute of Technology); WAGMAN, Michael (Fermilab)

Presenter: KANWAR, Gurtej (University of Bern)

Session Classification: Poster session and reception

Track Classification: Algorithms and Artificial Intelligence