



Contribution ID: 136

Type: **Oral Presentation**

Defining Canonical Momenta for Discretised $SU(2)$ Gauge Fields

Tuesday, 9 August 2022 15:00 (20 minutes)

Simulating $SU(N)$ gauge theories on a quantum computer requires some form of digitization of the gauge degrees of freedom. Recently, we have proposed discretisation schemes, which offer in contrast to finite subgroups the possibility to freely refine the discretisation. Here we present an approach to define the corresponding canonical momentum operators. We present results on the restoration of the fundamental commutation relations towards continuous gauge field degrees of freedom.

Primary authors: CRIPPA, Arianna; URBACH, Carsten (Helmholtz-Institut für Strahlen- und Kernphysik); CLEMENTE, Giuseppe (DESY - Zeuthen); OSTMEYER, Johann (University of Liverpool); JANSEN, Karl (DESY); GAROFALO, Marco (Helmholtz-Institut für Strahlen- und Kernphysik); ROMITI, Simone (uni-bonn); HARTUNG, Tobias (Department of Mathematical Sciences, University of Bath)

Presenter: URBACH, Carsten (Helmholtz-Institut für Strahlen- und Kernphysik)

Session Classification: Algorithms

Track Classification: Algorithms (including Machine Learning, Quantum Computing, Tensor Networks)