Contribution ID: **21** Type: **talk**

Variational Quantum Eigensolver for (2+1)-Dimensional QED at Finite Density

Thursday 23 January 2025 17:00 (45 minutes)

In this talk, we present an implementation of multiple fermion flavors in both the Kogut-Susskind and Wilson formulations for quantum simulations of (2+1)-dimensional Quantum Electrodynamics (QED). Our first results show a particular type of level crossing with one flavor of fermions at zero density, as expected from analytical Chern number calculations. Moving forward, we explore the multi-flavor system at finite density by including a chemical potential. Finally, we present results from inference runs executed on real quantum hardware.

Authors: ROSANOWSKI, Emil Otis; Mrs CRIPPA, Arianna (DESY Zeuthen); Prof. JANSEN, Karl (DESY Zeuthen); FUNCKE, Lena (University of Bonn); Mr ITABORAI, Paulo (Cyprus Institute/DESY Zeuthen); KÜHN, Stefan (The Cyprus Institute)

Presenter: ROSANOWSKI, Emil Otis

Session Classification: Thursday afternoon