



Contribution ID: 209

Type: Poster

## Opening up a Coulomb Phase in $\mathbb{Z}_3$ Gauge Theory

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

The investigation of  $\mathbb{Z}_N$  lattice gauge theories was initially undertaken to gain insights into the phase structure of lattice gauge theories. It is established that for  $N < 5$ , these theories exhibit two phases: an ordered, deconfining phase at low temperatures and a disordered, confining phase at high temperatures. For  $N \geq 5$ , an additional Coulomb phase emerges at intermediate temperatures. In their recent work, Nguyen, Sulejmanpasic, and Ünsal gave a theoretical argument that even for  $N < 5$ , the  $\mathbb{Z}_N$  theory can be deformed to reveal an intermediate phase. In our research, we propose a deformation of the  $\mathbb{Z}_3$  theory by suppressing monopoles and provide numerical evidence suggesting the appearance of a phase with an emergent  $U(1)$  symmetry, not present in the undeformed theory.

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**Session Classification:** Poster session and reception

**Track Classification:** Vacuum Structure and Confinement