



Contribution ID: 61 Type: 5th week (Formal developments and other frontiers in lattice QCD)

Phases of matter in systems with a discrete 1-form symmetry and the role of monopoles and center vortices

Tuesday, November 12, 2024 10:00 AM (1 hour)

I will discuss theories with the Z_N 1-form symmetry and argue that theories in 4d generically have three phases: the spontaneously broken phase, the restored (confined) phase and the coulomb phase. Natural string-like objects appear in this analysis, which we associate with the center vortices of the corresponding $SU(N)$ gauge theory. In addition the discussion also reveals particle-like objects which are naturally associated with monopoles. We will show that while the condensation of both of these is associated with the confined phase, the condensation of vortices alone causes a massless photon to appear. Since the massless photon phase should be there generically in any system with the same symmetry, I will show that it indeed appears in the Z_N lattice gauge theory.

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Session Classification: Seminar (5th week)