

## ICTS Joint String - Condensed Matter Seminar

**Title** : Continuum Limits of Qubit-Regularized Gauge Theories

**Speaker** : Shailesh Chandrasekharan (Duke University, USA)

**Date** : Thursday, 07 May 2026

**Time** : 3:30 PM (IST)

**Abstract** : The physical Hilbert space of conventional lattice gauge theories admits an orthonormal basis that can be represented as a tensor network of monomers and dimers, which we term the monomer–dimer tensor network (MDTN) basis. Within this framework, simple local Hamiltonians can be constructed, particularly when working in a truncated local Hilbert space. We refer to the resulting models as qubit-regularized gauge theories.

A central question is whether such nontraditional formulations admit quantum critical points that define continuum limits. If so, these critical points can give rise to massive quantum field theories that may also be interpreted as continuum gauge theories. In this talk, we argue that qubit-regularized  $SU(2)$  and  $SU(3)$  gauge theories on a plaquette chain realize such continuum limits via critical points in the Potts universality class.

The resulting continuum theories exhibit massive excitations that can be interpreted as analogs of glueballs. We also discuss the definition and computation of the string tension between static sources in this framework.

**Venue** : Emmy Noether Seminar Room

Zoom Link: <https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09>

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