



Contribution ID: 242

Type: **Talk**

Holography on the lattice: Evidence from 3D supersymmetric Yang–Mills theory

Monday 3 November 2025 18:00 (20 minutes)

We present new results from our lattice investigations of maximally supersymmetric Yang–Mills theory in three dimensions, focusing on its nonperturbative phase diagram. Using a lattice formulation that preserves part of the supersymmetry algebra at finite lattice spacing, we study the spatial deconfinement transition, which holography relates to the transition between localized and homogeneous black branes in the dual gravity theory. Our analysis employs $N_L^2 \times 8$ lattices with $N = 8$ colors in the $SU(N)$ gauge group, considering four aspect ratios $\alpha = N_L/N_T \leq 4$ with $N_L = 16, 20, 24$, and 32 . The resulting transition temperatures are consistent with the holographic low-temperature, large- N prediction $T_c \propto \alpha^3$, providing further evidence for the gauge-gravity correspondence in this setting.

Parallel Session (for talks only)

Theoretical developments and applications beyond Standard Model

Author: JOSEPH, Anosh (University of the Witwatersrand)

Co-author: Dr SCHAICH, David (University of Liverpool)

Presenter: JOSEPH, Anosh (University of the Witwatersrand)

Session Classification: Theoretical developments and applications beyond Standard Model