ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS String Seminar

Title : Monopoles, duality, and deconfined quantum tricriticality

Speaker : Shai Chester (Imperial College London, UK)

Date : Tuesday, 20th August 2024

Time : 3:30 PM (IST)

Abstract : We consider quantum electrodynamics in 3d (QED3) with N scalars and Chern-Simons level k. When k=0 and N=1, the theory is believed to be dual to the critical O(2) model, while when k=N=1 the theory is believed to be dual to a single free fermion, which is the seed to a web of non-supersymmetric dualities. We provide evidence for both dualities by computing monopole operator scaling dimensions to subleading order in the large N,k expansion. Surprisingly, extrapolating to N=k=1 or N=1 and k=0 yields scaling dimensions that match the conjectured duals to incredible accuracy, while k=0 and N>2 also matches lattice results to high accuracy. We then combine these results with the conformal bootstrap to argue that the notorious N=2 and k=0 theory (the Neel-VBS transition), which is the simplest example of deconfined quantum criticality, is tricritical.

Venue : Madhava Lecture Hall

Zoom Link: https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09
Meeting ID: 880 9276 6911
Passcode: 232322