



INTERNATIONAL  
CENTRE *for*  
THEORETICAL  
SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

## ICTS String Seminar

**Title** : Chern-Simons theory, knot invariants and matrix models

**Speaker** : Suvankar Dutta (IISER Bhopal)

**Date** : Friday, 30<sup>th</sup> December 2022

**Time** : 15:00 PM (IST)

**Abstract** : We shall discuss how a class of knot invariants (torus knot) in three manifolds (in particular  $S^3$ ) is related to the correlation functions of level  $k$ , rank  $N$  Chern-Simons theory. Using the relation between the saddle point description and collective field theory, we shall explain that the invariants for the Hopf link and unknot are given by the solution of inviscid Burger's equation. Next we shall show how the results of these two invariants can be used to compute the invariants of other two strands torus knots and links. Finally, we shall discuss how multi-representation correlation functions (related to multi-strands knots and links) can be computed using matrix bootstrap technique.

**Venue** : Online & Madhava Lecture Hall (ICTS)

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

Meeting ID: 880 9276 6911

Passcode: 232322