

## ICTS Seminar

Title : Amplitudes and hidden symmetries in  $N=2$  Chern-Simons matter theory

Speaker : Karthik Inbasekar, Tel Aviv University, Israel

Date : Wednesday, November 22, 2017

Time : 11:30 AM

Venue : Nambu Discussion Room (Left), ICTS Campus, Bangalore

Abstract : We compute all tree level scattering amplitudes in terms of  $2 \rightarrow 2$  scattering amplitude in  $U(N)$   $\mathcal{N}=2$  Chern-Simons (CS) theory coupled to matter in fundamental representation using BCFW recursion relations. Furthermore, we explain the result of arXiv:1505.06571, where it was shown that the  $2 \rightarrow 2$  scattering is tree level exact to all orders except in the anyonic channel, where it gets renormalized by a simple function of 't Hooft coupling. We show that tree level  $2 \rightarrow 2$  scattering amplitudes in 3d  $\mathcal{N}=2$  Chern-Simons theory coupled to a fundamental chiral multiplet are dual superconformal invariant. We further show that the large  $N$  all loop exact amplitude also has dual superconformal symmetry, which implies that dual superconformal symmetry is all loop exact which is in contrast to other known highly supersymmetric examples such as  $\mathcal{N}=4$  SYM and ABJM where the dual superconformal symmetry is in general anomalous. The presence of superconformal and dual superconformal symmetry indicate an infinite dimensional Yangian symmetry that suggests that the theory is integrable.