Speaker: Amit Sever (Tel Aviv University)

Title: Line Operators in Chern-Simons-Matter Theories and Bosonization in Three Dimensions

Abstract: We study Chern-Simons theories at large N with either bosonic or fermionic matter in the fundamental representation. The most fundamental operators in these theories are mesonic line operators, the simplest example being Wilson lines ending on fundamentals. We classify the conformal line operators along an arbitrary smooth path as well as the spectrum of conformal dimensions and transverse spins of their boundary operators at finite 't Hooft coupling. These line operators are shown to satisfy first-order chiral evolution equations, in which a smooth variation of the path is given by a factorized product of two line operators. We argue that this equation together with the spectrum of boundary operators are sufficient to uniquely determine the expectation values of these operators. We demonstrate this by bootstrapping the two-point function of the displacement operator on a straight line. We show that the line operators in the theory of bosons and the theory of fermions satisfy the same evolution equation and have the same spectrum of boundary operators.