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Bootstrapping observables in Planar N=4 SYM

Thursday 19 December 2024 12:00 (45 minutes)

In this talk, we explore the bootstrap approach for various observables in planar maximally supersymmetric Yang-Mills theory, including the spectral data, stress-tensor correlator, and energy-energy correlator (EEC). We begin by demonstrating why the conventional bootstrap approach fails in the planar limit. Then, we introduce a set of sum rules derived from dispersion relations, specifically designed for this context. By combining these sum rules with integrated constraints from supersymmetric localization and data from integrability, we set up a numerical bootstrap problem that yields rigorous, two-sided bounds on the OPE coefficients, the four-point correlation function, and the EEC at any value of the coupling in the planar limit. In this talk, we present some of these bounds.

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