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Valentina Prilepina "Illuminating CFTs with the Higher-Point Bootstrap: A Powerful Approach"

Thursday, November 13, 2025 11:00 AM (1 hour)

In this talk, I will present a practical realization of the higher-point conformal bootstrap, focusing on the five-point comb channel implementation thereof. I will consider 5-point scalar correlators in d -dimensional conformal field theories (CFTs). I will begin by laying out a robust algorithm for the efficient numerical evaluation of conformal blocks for exchanged primary operators of arbitrary spin. I will then describe an explicit implementation of the 5-point bootstrap. With this, I will proceed to study 5-point correlators in the 3d critical Ising model. I will examine correlators involving σ , and ϵ , truncating the operator product expansion (OPE) to include contributions due to operators with conformal dimension below a certain cutoff. In each case, I will approximate the remaining contributions by their counterparts in a suitable disconnected five-point correlator. Finally, I will discuss the results obtained through the five-point bootstrap for a number of OPE coefficients involving two or more spinning operators. While these coefficients are nontrivial to access by means of the four-point bootstrap, they are within ready reach of the higher-point bootstrap, where we are able to compute a number of OPE coefficients with greater accuracy than previous methods. I will compare some newly-determined OPE coefficients to corresponding results from the four-point bootstrap and the fuzzy sphere regularization technique. At the end, I will give a preview of the six-point snowflake channel implementation of this method. This analysis will ultimately establish the higher-point bootstrap as a powerful tool for studying CFTs.