Bootstrapping Yang-Mills matrix integrals

In this talk, we revisit the large N limit of bosonic D-matrix Yang-Mills integrals using two complementary bootstrap methods.

In the positivity bootstrap, we obtain bounds for $\langle \mathrm{Tr} XX \rangle$ and $\langle \mathrm{Tr} XXXX \rangle$ at various length cutoff $L_{\max}$. The precision of some $L_{\max} = 12$ islands is comparable to that of Monte Carlo estimates. For a fixed $L_{\max}$, the allowed region also shrinks with D and converges to the large D expansion results. We further deduce the analytic expressions of various types of trajectories and eigenvalue distributions at large D. Based on these explicit formulas, we propose some ansatz for the analytic trajectory bootstrap and obtain accurate results for finite D.

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