Towards Singlet Spectrum in SYK-like Tensor Models

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Date: Feb 04, 2019

Time: 11.30 am

Venue: A-304, TIFR

Recently, a lot of work has been done on the SYK model and its tensor counterparts. These SYK-like tensor models are first introduced by Witten based on the work of Gurau et al. I start by introducing these SYK-like tensor models and then discuss briefly some numerical results about the spectrum of $N=27$ uncolored model. After this, I will propose a systematic way to :
(a) Diagonalize the Hamiltonian of these tensor models analytically,
b) Identify the gauge invariant/singlet states among the eigenstates of the Hamiltonian.
I will then discuss a nontrivial example where we have identified the complete singlet spectrum analytically using the above method. I conclude my talk by listing some future directions.

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