

APCTP SEMINAR

Subleading Weingartens: random unitary behavior in Brownian SYK and in gravity

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#512, APCTP & Online via ZOOM

The spectrum of chaotic system, especially at late time, follows random matrix universality. Thus, we can use random matrix to predict the behavior of many body chaotic systems and gravity in AdS/CFT context. Haar integral over unitary group contain subleading terms that are needed for unitarity. We study analogous effects in the time evolution operators of Brownian SYK and JT gravity. In both models, non-perturbative effects are crucial. In Brownian SYK, we find a family of configurations, which is analogous to bulk topology change in JT gravity. Slightly off-shell modes near these non-perturbative saddles, which are exponentially amplified by chaos, plays an important role in reproducing unitarity behavior.

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