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The OPE Randomness Hypothesis and Euclidean Wormholes

Wednesday, 17 March 2021 13:30 (1 hour)

Recent developments in holography indicate that the semi-classical Euclidean path-integral of Einstein gravity is much more powerful than previously anticipated. It is capable of reproducing a unitary Page curve for black hole evaporation, and can even capture some features of the discrete nature of black hole microstates. Wormhole geometries play a key role in this context. I will propose a mechanism to explain this in the CFT: the OPE Randomness Hypothesis. This ansatz is a generalization of the Eigenstate Thermalization Hypothesis which applies to chaotic CFTs, and treats OPE coefficients of heavy operators as random variables with a given probability distribution. I will present two applications of this framework: First, it resolves a factorization puzzle in AdS_3/CFT_2 due to the genus-2 wormhole, as raised by Maoz and Maldacena. Second, it provides an argument against global symmetries in quantum gravity.

45' talk + 15' discussion

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