Department of Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

Quantum chaos, OPE coefficients and wormholes

(Zoom Seminar)

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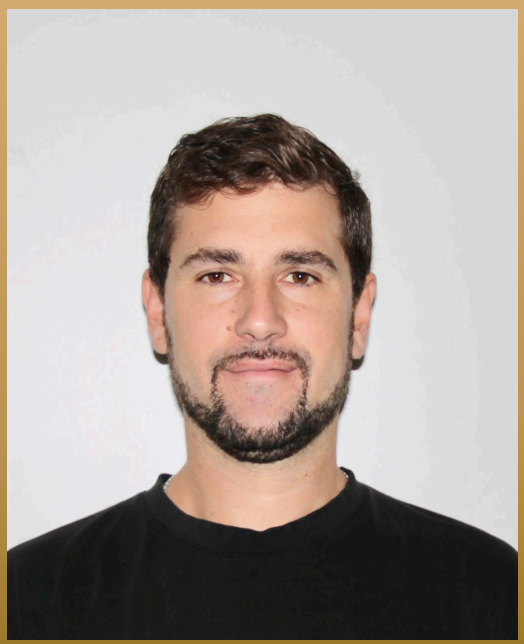
(CERN)

Date: February 28, 2022

Time: 4.00 PM IST

Zoom link shall be shared separately



In this talk, I will discuss the statistical distribution of OPE coefficients in chaotic conformal field theories. I will present the OPE Randomness Hypothesis (ORH), a generalization of ETH to CFTs which treats any OPE coefficient involving a heavy operator as a pseudo-random variable with an approximate Gaussian distribution. I will then present some evidence for this conjecture, based on the size of the non-Gaussianities and on insights from random matrix theory. Turning to the bulk, I will argue that semi-classical gravity geometrizes these statistical correlations by wormhole geometries. I will show that the non-Gaussianities of the OPE coefficients predict a new connected wormhole geometry that dominates over the genus-2 wormhole.