We introduce a simplicial regularization of four dimensional quantum gravity via Causal Dynamical Triangulations (CDT). In this non-perturbative and background independent framework, a quantum universe with a global shape of a Euclidean de Sitter spacetime emerges as dynamically generated background geometry. Although no degrees of freedom were frozen, the measurements of the scalar curvature on the scale \( r \gg 1 \) are consistent with the predictions of the Gauss-Bonnet and the Friedmann-Robertson-Walker structure of the model and the transfer matrix approach. Further, we discuss microscopic and macroscopic properties of the geometry of the background.

Bootstrap percolation on the random graph \( G_{np} \)

Bootstrap percolation on the random graph \( G_{np} \) is a process of spread of "activation" on a given realization of the graph with a given initial size of activation with a high probability is either \( n^{o(1)} \) or it is \( o(n) \). I will give a pictorial introduction to the model the final size of activation with a high probability is either \( n^{o(1)} \) or it is \( o(n) \). I will show how to extend these techniques to the \( \mathbb{A}^{4}/\mathbb{W}\mathbb{M}\mathbb{I}U\) correspondence to compute in the bulk exactly in \( n \) and n bounces the perturbative part of objects which is given by n as any function from the gauge theory.

Andreas Görlich (Krakow)

Mesoscopic spectral statistics and the fractional Brownian motion process with \( H = 0 \)

Mesoscopic spectral statistics and the fractional Brownian motion process with \( H = 0 \) on the global and the local scale. As a mathematical byproduct we show that a particular asymptotic expansion of a Meijer G-function with large index leads to a Gaussian.

I'll show how to use localization in supergravity to compute exactly the free energy on AdS space and show the holographic correspondence and the localization technique of Witten and Pestun.

Blai Garolera (LNP)

Statistics of K-Matrices in Quantum Chaotic Scattering

Starting from exact analytical results on singular values and complex eigenvalues of products of independent Gaussian complex random \( \gamma \)-matrices we obtain integrality of the answer. I'll also show how to extend these techniques to the \( AdS_{4}/\mathbb{C}FT \) correspondence to compute in the bulk exactly in \( n \) and n bounces the perturbative part of objects which is given by n as any function from the gauge theory.

Nicholas Simm (Queen Mary, London)

Mellin transforms and integrals involving the Meijer G-function with large index leads to a Gaussian.