Contribution ID: **7**   Type: **Long talk (20 mins)**

Cauchy Slice Holography

Friday, 16 December 2022 13:30 (30 minutes)

In the Canonical theory of Quantum Gravity (CQG), states are given by the superposition of geometries on a Cauchy slice, called the Wheeler-DeWitt (WDW) states. On the other hand, the Holographic principle states that quantum gravity in d+1 spacetime dimensions is the same as a quantum field theory in d spacetime dimensions. In this talk, I will briefly review both of these and will explain how to reformulate CQG as a holographic theory by defining a new holographic dictionary that maps any state of the boundary field theory to a bulk WDW state. This dictionary is an isomorphism between the Hilbert space of CQG and holographic CFT. This also reformulates the holographic principle in a way that the dual field theory now lives on Cauchy slices of the bulk, hence applicable to dS and flat spacetimes too. I will then explain why this is a manifestly background independent theory of "effective"quantum gravity. Time permitting, I will also discuss UV completion of quantum gravity, emergence of classical spacetime from WDW states and its possible implications for the black hole information paradox and holographic cosmology. Based on work with Goncalo Araujo-Regado and Aron C. Wall: arXiv:2204.00591.

Type of presentation

20 minute talk

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