LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS (LEPP)

Theory Seminar

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Bulk reconstruction in AdS3

A fundamental puzzle in quantum gravity is the blackhole information problem. The center piece of this puzzle is the firewall paradox, which is a clash between the approximately local low energy dynamics and the fundamentally non-local nature of gravity. In an asymptotically AdS space, the boundary CFT provides a UV complete description for the bulk quantum gravity and should encode a solution to the firewall paradox. To make direct progress, the first step is to express the approximately local bulk observables as operators in the CFT, a scheme known as bulk reconstruction. In this talk, I will describe a reconstruction algorithm in AdS3/CFT2 that includes quantum gravity effects by incorporating contributions from all interactions with gravitons. Then I will use this algorithm to compute various observables, showing that it agrees with Witten diagrams and automatically reproduce different semiclassical backgrounds. I then explicitly demonstrate a breakdown of bulk locality that arise as all non-perturbative gravitational interactions are included.

Wednesday, Feb 28, 2018
2:00pm
401 Physical Sciences Building