

Exact Bulk Operators and the Fate of Locality (Jared Kaplan, Johns Hopkins)

Monday, 2 April 2018 13:45 (1 hour)

Abstract: We recently used Virasoro symmetry considerations to propose an exact formula for a bulk proto-field ϕ in AdS3. In this talk we will explain the construction and study the propagator $\langle\phi\phi\rangle$. Many techniques from the study of conformal blocks can be generalized to compute it, and when the results are expanded at large central charge, they match gravitational perturbation theory for a free scalar field coupled to gravity in Fefferman-Graham gauge. Although the propagator appears to be local to all orders in perturbation theory, we explicitly compute non-perturbative effects in $G \sim 1/c$ that spell the breakdown of bulk locality: the commutator (or retarded propagator) is non-vanishing at small spacelike separations.

Summary