



Department of
Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

Why CFT correlators can't probe sub-AdS Locality

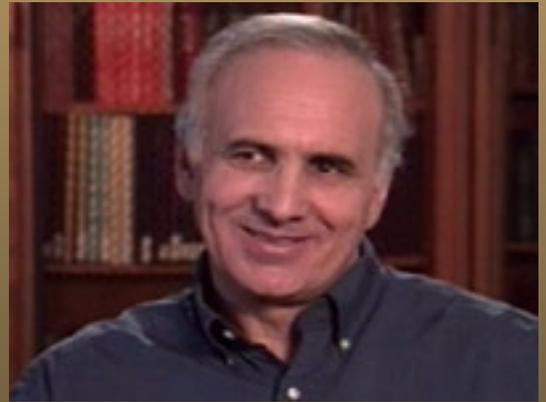
Tom Banks

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Date: March 14, 2017

Time: 11.30 am

Venue: A-304, TIFR



I'll give two arguments that the full non-perturbative S matrix of Minkowski space-time cannot be recovered as a limit of CFT correlators. The first is related to the interesting fact that the S-matrix is not unitary in Fock space (a fact long known in 4 dimensions, where it has no finite Fock space matrix elements, but true in arbitrary dimensions). Processes involving "an infinite number of infinitely soft gravitons" cannot be recovered in any straightforward way from CFT correlators. The second argument has to do with the difference between the fast scrambling behavior of flat space black holes and the ballistic Lieb Robinson bound on the scrambling of information in any cutoff quantum field theory. I'll show how the formalism of Holographic Space-time (HST) can incorporate both these behaviors in terms of a rapid crossover in the time dependent Hamiltonian of HST at proper times of order the AdS radius. If there's time, I'll also explain how HST explains the fact that "large radius" AdS spaces always come equipped with an equally large compact space of at least two dimensions..

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