Department of Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

Unitarity and the Chaos bound

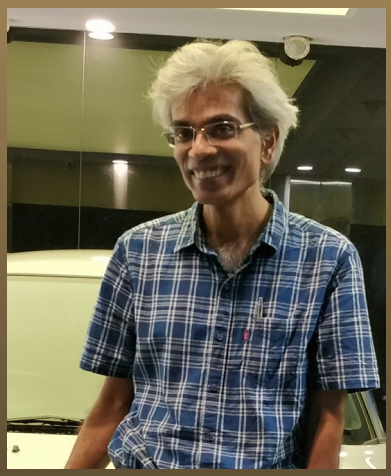
Justin David

(IISc, Bangalore)

Date: November 18, 2019

Time: 11.30 am

Venue: A-304, TIFR



We study the role of unitarity in various observables in 2d CFTs. We consider 2d CFTs with large central charge in a state obtained by the insertion of an operator of large conformal dimensions at spatial infinities in the thermal state. We show that there is a violation of the chaos bound whenever the operator has negative conformal dimensions. We present a specific realisation of this situation in the holographic Chern-Simons formulation of a CFT with $W_3^{(2)}$ symmetry also known as the Bershadsky-Polyakov algebra. We also show that the unitarity bound in CFTs which admit W_3 symmetry on states with higher spin-3 charge ensures that the chaos bound is satisfied, as well as the jump in entanglement entropy during local quantum quenches remains real and finite.