



ICTS String Seminar

Title : The S-matrix and boundary correlators in flat space

Speaker : Diksha Jain (TIFR, Mumbai)

Date : Wednesday, 14th February, 2024

Time : 03:45 PM (IST)

Abstract : In this talk, I will define and study the boundary correlation functions obtained from the path integral as a functional of boundary values in flat space. The flat space S-matrix can be extracted directly from these boundary correlation functions after smearing. Next, I will derive the constraints on this path-integral that follow from the unitarity of the S-matrix. We then study the locality structure of boundary correlation functions. In the massive case, we find that the boundary correlation functions for generic locations of boundary points are dominated by a saddle point which has the interpretation of particles scattering in a small elevator in the bulk, where the location of the elevator is determined dynamically, and the S-matrix can be recovered after stripping off some dynamically determined but non-local "renormalization" factors. In the massless case, we find that while the boundary correlation functions are generically analytic as a function on the whole manifold of locations of boundary points, they have special singularities on a sub-manifold, points on which correspond to light-like scattering in the bulk. This analysis parallels the analysis of bulk-point singularities in AdS/CFT and generalizes it to the case of multi-bulk point singularities.

Venue : Offline: Emmy Noether Seminar Room

Online: Please click on the below link to join the seminar

<https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09>

Meeting ID: 880 9276 6911

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