ICTS Synopsis Seminar

Title   :   The Hilbert space of de Sitter quantum gravity

Speaker   :   Priyadarshi Paul (ICTS-TIFR, Bengaluru)

Date   :   Friday, 3rd May 2024

Time   :   11:00 AM (IST)

Abstract   :   We obtain solutions of the Wheeler-DeWitt equation with positive cosmological constant for a closed universe in the large-volume limit. We argue that this space of solutions provides a complete basis for the Hilbert space of quantum gravity in an asymptotically deSitter spacetime. Our solutions take the form of a universal phase factor multiplied by distinct diffeomorphism invariant functionals, with simple Weyl transformation properties, obeying the same Ward identities as a CFT partition function. The Euclidean vacuum corresponds to a specific choice of such a functional but other choices are equally valid. Each functional can be thought of as specifying a "theory" and the space of solutions is like "theory space". We describe another basis for Hilbert space where all states are represented as excitations of the vacuum that have a specific constrained structure. This gives the finite GN generalization of the basis proposed by Higuchi in terms of group averaging.

Venue   :   Emmy Noether Seminar Room

              Zoom link: https://icts-res-in.zoom.us/j/97335751789?pwd=S01GdGJic3A4ZTJSU2NYdDloSmNNZz09
              Meeting ID: 973 3575 1789
              Passcode: 030304