FEZA GÜRSEY CENTER FOR PHYSICS AND MATHEMATICS

Dual Perspectives Meetings

Searching for Discrete Series Bosons and Fermions in dS2

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Abstract:

Seeking to understand the microscopic degrees of freedom of gravity and matter in de Sitter spacetime, we develop tools for quantum field theory on a fixed de Sitter background and a toy model for gravity in dS2.

We will consider the role of a particular series of representations of the de Sitter isometry group: the discrete series of unitary irreducible representations of SL(2, R). Focusing on theories with states and operators transforming in these representations, we are led to a highly constrained gauge theory, describing non-propagating gravity coupled to matter in dS2. We will make a conjecture that the microscopic degrees of freedom of the bulk theory may be described in terms of a solvable quantum-mechanical model. We will also consider the possibility of supersymmetrizing the model to include degrees of freedom transforming in the fermionic counterpart of the discrete series.

Date:

Friday, July 04, 2025

Program:

Morning session 10:30-12:00, Afternoon session 13:30-15:00

Location:

Boğaziçi University, Kandilli Campus, Üsküdar-İstanbul