

SPEAKER: Manus Visser

TITLE: **De Sitter Entropy and the
Gravitational Path Integral**

DATE: 4 May 2022, 15:00

PLACE: 1/1-2 - Aula "C. Voci"

ABSTRACT

Gibbons and Hawking famously derived the de Sitter horizon entropy from the Euclidean gravitational path integral in the saddle point approximation. This result is a crucial hint for quantum gravity in de Sitter space, as it suggests that the Hilbert space is finite dimensional. In this talk we extend this result in two different ways. First, we compute the entropy of de Sitter black holes from the on-shell Euclidean action, and take their contributions in the gravitational path integral into account using the formalism of constrained instantons. We use this to calculate the pair creation rate of arbitrary mass black holes in de Sitter space. Second, in two-dimensional de Sitter space we show how the generalized entropy (the sum of the classical gravitational entropy and matter entanglement entropy) can be obtained from an on-shell action for semiclassical dilaton gravity in the microcanonical ensemble. Minimizing the action yields extremizing the generalized entropy, consistent with the island formula. This talk is based on recent work 2203.00700 and 2203.06155.

Organized by

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