INTERNSHIP PROPOSAL

Laboratory name: CPHT (Centre de Physique Théorique - Ecole Polytechnique)
CNRS identification code: UMR 7644
Internship director: Hervé PARTOUCHE
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Internship location: CPHT - Ecole Polytechnique

Thesis possibility after internship: YES
Funding: ED IP Paris PhD Fellowship Selection

Title

In quantum gravity, the holographic principle states that a gravitational theory can be described by a theory without gravity localized on the boundary of the universe. In a closed universe, however, it is unclear where such a holographic description may be formulated. However, in a universe similar to that encountered during primordial inflation, or in the universe as we observe it today, where the expansion of the universe is accelerating, a cosmological horizon exists for every observer. It is therefore conceivable that a holographic description of what is observed by each observer could exist on their cosmological horizon. This may indeed be the case in de Sitter spacetime, where arguments by Gibbons and Hawking suggest that the cosmological horizon is characterized by a temperature and an entropy directly related to the area of the horizon rather than to the volume it encloses. The aim of the internship is to explore recent ideas proposing a microscopic interpretation of the macroscopic entropy of de Sitter spacetime.

Please, indicate which speciality(ies) seem(s) to be more adapted to the subject:

Theoretical Physics: YES