THE GEOMETRY OF COMPUTATIONAL COMPLEXITY

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Abstract:
Holography suggests a deep connection between quantum information concepts and gravity.
In this context, computational complexity may play a role in the description of the physics of a black hole interior. Complexity was originally introduced in the field of computer science as the minimum number of simple operations required to complete a computational task, i.e. to bring a system from a reference state to a target one. However, the holographic application requires a firmer definition of such a notion.
A progress in this direction has been made by means of the toolkit of differential geometry.
The geometric approach replaces the discrete implementation of simple operations with the continuous flowing through states on proper manifolds. Complexity is thus defined as the length of the shortest path representing the system's transformation. In this seminar, we present the features and advantages of complexity geometry, outlining recent results.

Webinar

Mercoledì 3 febbraio 2021, ore 16.30

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