Institut Henri Poincaré

11 rue Pierre et Marie Curie, 75231 Paris cedex 05

String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

Jeudi 13 Juin 2024, 11:45

Umut Gursoy

ITP, Utrecht University

Toward a microscopic derivation of gauge-string duality

Fundamental questions such as emergence of geometry and gravitational dynamics from QFT amplitudes, barring specific examples, remain unanswered at the full stringy level in gauge-gravity duality. In this talk I will discuss recent progress toward a microscopic approach based on the worldline formulation of QFT. In particular, I will consider large-loop quantum corrections in holographic QFTs where internal propagators of Feynman diagrams are characterized by the Schwinger parameters and argue that embedding of string in the holographic coordinate emerges from the continuum limit of these Schwinger parameters at infinite loop limit. I will demonstrate, employing the techniques of Strebel differentials and discrete exterior calculus, how a worldsheet action for a bosonic string embedded in asymptotically AdS space-time could emerge from multi-loop Feynman graphs in a class of bosonic QFTs. I will end with a discussion of possible loopholes in this approach.

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