

Quantum field theory meets gravity

DESY THEORY WORKSHOP

HELMHOLTZ
RESEARCH FOR GRAND CHALLENGES

Quantum field theory meets gravity



24 - 27 September 2019
DESY Hamburg, Germany

Contribution ID: 3

Type: **not specified**

Quantum Gravity from Timelike Liouville

Thursday, 26 September 2019 14:00 (20 minutes)

The Euclidean path integral of quantum gravity requires a proper definition because the kinetic term for the conformal factor of the metric comes with an additional minus sign. We propose a definition of two-dimensional quantum gravity with a cosmological constant based on the conformal bootstrap results of timelike Liouville theory coupled to matter. For the spectrum, we prove a no-ghost theorem for the states in the BRST cohomology. We then show that the crossing symmetric 4-point function constructed by gluing the timelike 3-point function with the Ribault-Santachiara contour for internal momenta, is well-defined when the external momenta are analytically continued to correspond to the physical states in the BRST cohomology.

Primary authors: Prof. DABHOLKAR, Atish (ICTP); Dr ERBIN, Harold (LMU); Dr BAUTISTA, Teresa (Max Planck Institute for Gravitational Physics)

Presenter: Dr BAUTISTA, Teresa (Max Planck Institute for Gravitational Physics)

Session Classification: Parallel Session: String & Mathematical Physics

Track Classification: String & Mathematical Physics