MP 11: AdS/CFT III and Quantum Gravity

Zeit: Donnerstag 8:30–10:25   Raum: SFG 2010

Hauptvortrag   MP 11.1   Do 8:30   SFG 2010
Interactions in Higher-Spin Gravity: a Holographic Perspective — •Charlotte Sleight — Université Libre de Bruxelles, Brussels, Belgium

A long standing problem in theoretical physics is understanding if gauge fields of spin $s > 2$ can interact in a consistent manner. In this talk we review how the AdS/CFT correspondence (holography) seems to naturally imply the existence of consistent interacting theories of higher-spin gauge fields, which are believed to capture the high-energy regime of string theory. We also briefly discuss recent results which employ AdS/CFT to construct a possible non-linear action for higher-spin theories on an AdS background, free from auxiliary fields.

10 min. break

MP 11.2   Do 9:25   SFG 2010
The phases of higher spin black holes — •Ignacio Reyes[1,2], Max Banados[2], Gustavo During[2], and Alberto Faraggi[2] — [1]Institut für Theoretische Physik und Astrophysik, Julius-Maximilians-Universität Würzburg, Germany — [2]Pontificia Universidad Catolica de Chile, Santiago, Chile

We study the thermodynamic phase diagram of three-dimensional sl(N,R) higher spin black holes. By analyzing the semi-classical partition function we uncover a rich structure that includes Hawking-Page transitions to the AdS3 vacuum, first order phase transitions among black hole states, and a second order critical point. Our analysis is explicit for $N = 4$ but we extrapolate some of our conclusions to arbitrary N. In particular, we argue that even N is stable in the ensemble under consideration but odd N is not.

MP 11.3   Do 9:45   SFG 2010
Interfacing non-perturbative quantum gravity and AdS/CFT — •Norbert Bodendorfer — LMU München

We report on ongoing research on using non-perturbative quantum gravity in the context of AdS/CFT.

MP 11.4   Do 10:05   SFG 2010
Shape Dynamics in Loops from a Conformal Barbero-Immirzi Parameter — •Patrick Wong — Universität zu Köln, Cologne, Germany

The Barbero-Immirzi parameter of loop quantum gravity is a one parameter ambiguity of the theory whose interpretation is not universally agreed upon. It is an inherent characteristic of the quantum theory as it appears in the spectra of geometric operators. An interesting realization is that promoting the Barbero-Immirzi parameter to play the role of a conformal transformation leads to a system which can be identified as analogous to the linking theory of shape dynamics. A three-dimensional gravitational gauge connection is then constructed within the linking theory in a manner analogous to loop quantum gravity, thereby facilitating the application of the established procedure of loop quantization to a shape dynamical theory.