3rd Karl Schwarzschild Meeting - Gravity and the Gauge/Gravity Correspondence

Report of Abstracts

Abstract ID : **27**

Quantum Geometric Flows and Implications to Quantum Gravity

Content

We develop a novel approach to quantum geometry based on geometric flows, and we propose that this quantum geometry can be used to describe quantum gravity. Thus, we first identify the degrees of freedom for the dynamical system describing such geometric flows. We then are able to demonstrate that Raychaudhuri equation is the classical field equation obtained from the Hamiltonian (and action) of such a dynamical system. As we have the full Hamiltonian (and action) for the geometric flows, we are able to quantize this system using a functional Schr\"{o}dinger's equation. Unlike the Wheeler-DeWitt equation, this Schr\"{o}dinger's equation for geometric flows has an intrinsic definition of time. We also comment on the Ehrenfest limit of this Schr\"{o}dinger's equation describing quantum geometric flows, and its implications for the Hawking-Penrose singularity theorems.
We also discuss the implications of this formalism to cosmology and Black holes.

Summary

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