JOINT TUFTS/MIT COSMOLOGY SEMINAR

Real time quantum cosmology
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I will revisit the path integral approach to quantum cosmology, from the viewpoint of the real Lorentzian path integral rather than the often-employed Euclidean version. At least in simple minisuperspace settings, Picard-Lefshetz theory allows one to define the path integral unambiguously, and selects the relevant saddle points. Comparing with the canonical approach, this allows one to single out a unique solution of the Wheeler-De Witt equation. If one imposes no-boundary initial conditions, the resulting weighting of the wave function favors large values of the cosmological constant, in agreement with Vilenkin's tunneling proposal but in contrast to the Hartle-Hawking prescription.

Within the framework described here one can also describe quantum transitions between contracting and expanding universes. I will describe two examples of such potential quantum resolutions of classical big crunch singularities.

Wednesday, March 15, 2017, 2:30 pm
Cosman Seminar Room
Center for Theoretical Physics
Building 6C, Room 6C-442
Massachusetts Institute of Technology

Refreshments at 2:00 in the same room