Departmental Colloquium

Thursday, 3:40 PM, March 24, 2011
109 Nicholson Hall

"Spin-foams: Path integral and canonical quantum gravity in one"

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Host: Kristina Giesel, Jorge Pullin and Parampreet Singh

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

Path integral and canonical quantizations are sometimes presented as different equivalent formulations of quantum mechanics. But, though Path integrals have the strength of allowing space-time covariant expressions for quantum dynamics, if one is careful, one sees that they implicitly use information from the canonical theory. Loop quantum gravity is in many ways a highly successful canonical quantization of general relativity, but there is no broad consensus regarding the definition of its dynamics. Spin-foams offer a definition of the dynamics of LQG via path integral. In this approach, the successes of LQG are retained -- predictions of discrete geometric spectra and black hole entropy calculations, for example -- while allowing dynamics to be defined in a space-time covariant way. In this talk, I will present the general arguments motivating the spin-foam approach, the conceptual non-trivialities involved, and give a summary of progress that has been and is being made.

Publications:

