

MATHEMATICAL RESEARCH AT NOTRE DAME

Guest Speaker: Pavel Mnev
University of Notre Dame

Date: Friday, November 4, 2016

Time: 4:00 PM

Location: 129 Hayes-Healy Hall



Lecture Title:

Quantum mechanics on graphs

Abstract

We will discuss how the problem of counting paths going along the edges of a graph gives a toy model for Feynman's path integral in quantum mechanics. Relation of path counting to the spectrum of the graph Laplacian gives a toy model for the equivalence of the operator approach and the path integral approach in quantum mechanics. We will discuss several generalizations and modifications of the model and, time permitting, will explain the counting of "geodesics" (non-returning paths) and the Selberg's trace formula for graphs (modelling the relation of the count of geodesics on a hyperbolic surface vs. the spectrum of the Laplacian).