Colloquium

UNIVERSITY OF NOTRE DAME
Department of Mathematics

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Wednesday, October 28, 2015
4:00 PM
117 Hayes-Healy Hall

Title: Quantum BV theories on manifolds with boundary

Abstract:

I plan to give an introduction to the programme of perturbative quantization of gauge theories (and in particular, topological field theories of AKSZ type) on manifolds with boundary. The machine we build eats an action functional of a gauge theory and gives as an output a quantum field theory satisfying certain set of axioms which include compatibility with gluing of source manifolds (a variant of Atiyah-Segal functorial gluing), compatibility with gauge symmetry (a variant of Batalin-Vilkovisky master equation) and compatibility with a version of Wilson's renormalization flow. One motivation for this programme is to reunite the perturbative treatment of topological field theory (e.g. Axelrod-Singer's perturbative partition function of Chern-Simons theory on a rational homology 3-sphere, given in terms of configuration space integrals), with the "non-perturbative" idea of functorial field theory. This is a report on joint work with Alberto S. Cattaneo and Nicolai Reshetikhin.