



**PURDUE UNIVERSITY**

**Special Colloquium**

Speaker: Dr. John Francis, Northwestern University  
Title: "Factorization Homology of Topological Manifolds"  
Date: Monday, December 5, 2011  
Time: 4:30 P.M.  
Place: REC 114

**Abstract**

Factorization homology, or the topological chiral homology of Lurie, is a homology theory for manifolds conceived as a topological analogue of the homology of Beilinson & Drinfeld's factorization algebras. I'll describe an axiomatic characterization of factorization homology, generalizing the Eilenberg-Steenrod axioms for usual homology. The use of excision for factorization homology facilitates a short proof of the nonabelian Poincare duality of Salvatore and Lurie; this proof generalizes to give a nonabelian Poincare duality for stratified manifolds, joint work with David Ayala & Hiro Tanaka. Work in progress with Kevin Costello aims to express quantum invariants of knots and 3-manifolds in terms of factorization homology, which, time permitting, I'll outline.