Department of Mathematics
University of Notre Dame

Sarah Petersen - University of Notre Dame

GRADUATE STUDENT SEMINAR

Guest Speaker: Sarah Petersen
University of Notre Dame

Date: Monday, November 4, 2019
Time: 4:00 PM
Location: 117 Hayes-Healy Hall

Lecture Title:
Operads and Koszul Duality

Abstract

Koszul duality is a fundamental homological phenomenon with manifestations including the relation between the homotopy groups of a topological space and its homology groups, and the relation between an augmented algebra A and its Ext-algebra $Ext_A(k,k)$. Given a Koszul algebra A, we can replace the large cobar-bar model ΩBA of A by the smaller $\Omega A^!$. This talk will introduce and extend the notion of Koszul duality for algebras to operads. We will begin with the classical definition of an operad, viewing it as a multicategory with a unique object. We will then proceed to construct the operads corresponding to associative and commutative algebras in an intuitive way before tackling the operadic bar and cobar constructions.