

# *Graduate Student Seminar*

University of Notre Dame – Department of Mathematics

**Speaker:** Katrina Barron  
University of Notre Dame

Monday, September 8, 2014  
5:00 pm  
258 Hurley Hall

**Title:** An Introduction to the Algebraic Aspects of Conformal Field Theory and Applications

**Abstract:** Conformal Field Theory (CFT) is an attempt to unify all fundamental forces, including gravity, by modeling particles as vibrating strings. In the genus-zero, two-dimensional setting, vertex operator algebras (VOAs) describe the particle interactions. Independently from physics, VOAs were discovered in mathematics in the study of representations of infinite-dimensional Lie algebras and the Monster finite simple group. This study led to the surprising connection between CFT, VOAs and number theory. I will briefly give a flavor of some of the mathematics involved.