Discrete Mathematics Seminar

Time: Friday, 11 November 2011, 1:00-2:00 PM
Room: 238 Derrick Hall
Title: Rings and Modules in Stable Homotopy Theory
Speaker: Dr. Maria Basterra, Department of Mathematics and Statistics,
University of New Hampshire

Abstract:

The basic idea of algebraic topology is to study topological spaces by assigning to them algebraic quantities which are homotopy invariant. Some of the most effective invariants are given by generalized (co)-homology theories which support products. In this talk we give an introduction to this circle of ideas and present the stable category as the homotopy category of a category of objects that represent generalized (co)-homology theories. This category turns out to be symmetric monoidal i.e. support a product that allows us to import into topology many of the concepts of algebra. Theories represented by commutative ring spectra have associated categories of modules and allow for constructions of great importance to calculations. We will outline an approach to obstruction theory to commutative multiplications on a spectrum. This theory is based on Topological Andre-Quillen cohomology and is part of my work with Mike Mandell.