Temple University Mathematics Colloquium

Yuri Berest

Cornell University

will speak on

Derived Representation Varieties and Cyclic Homology

ABSTRACT: Many important varieties in algebra, geometry and physics can be realized as moduli spaces of finite-dimensional representations of associative algebras and groups. The simplest and most commonly used are the classical representation scheme $\mathrm{Rep}_n(A)$ parametrizing the n-dimensional representations of a finitely generated algebra A over a field k and its affine (algebro-geometric) quotient $\mathrm{Rep}_n(A)//\mathrm{GL}_n(k)$ parametrizing the isomorphism classes of semisimple representations. Each of these schemes defines a (contravariant) functor on the category of algebras. In this talk, I will explain how to construct the derived functors of Rep_n and $\mathrm{Rep}_n//\mathrm{GL}_n(k)$ in the sense of (non-abelian) homological algebra and compute their stable homology as n goes to infinity. Time permitting, I will discuss some variations and applications of these constructions in knot theory and low-dimensional topology. This talk is aimed for a general mathematical audience. In particular, most of it should be accessible to graduate students.

Monday, April 30, 2012
Lecture at 4:00 pm
Coffee, tea, and refreshments from 3:40 pm
Room 617, Wachman Building
Department of Mathematics