Temple University Mathematics Colloquium

Friedrich Knop
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will speak on

Construction of tensor categories

ABSTRACT: In many applications, the (finite dimensional) representations of an algebraic group G are more important than the group itself. The collection of all representations has the structure of an abelian tensor category $\mathcal{T}$. It is known (Tannaka duality) that G can be reconstructed from $\mathcal{T}$. In this sense, the notion of abelian tensor categories generalizes the concept of algebraic groups.

One of the surprising facts of tensor categories is that they sometimes come in families which interpolate discrete sequences of groups. For example, there is an abelian tensor category $\mathcal{T}(t)$, depending on the parameter t, which can be regarded as the category of representations of $\mathrm{GL}(t, \mathbb{C})$ where t is an arbitrary complex number! In this sense, Deligne constructed recently the category of representations of the symmetric group S_t where, again, t is an arbitrary complex number.

We are going to sketch a generalization of Deligne's construction which assigns a family of abelian tensor categories to certain regular categories (like the category of finite groups, finite rings, vector spaces over a finite field, and many more). This construction is a modification of the classical calculus of relations (aka. correspondences).

Monday, September 25, 2006
Lecture at 4:00 PM (♯)
Coffee, tea, and refreshments from 3-5 PM.
Room 617, Wachman Building
Department of Mathematics