I'll parachute some results in from motivic cohomology.

The Trivial Notions Seminar
Proudly Announces

Sums-of-squares formulas

A talk by

David Roe

Abstract

I will consider the following question: for values of r, s and n do there exist identities of the form

$$\left(\sum_{i=1}^{r} x_i^2\right) \cdot \left(\sum_{i=1}^{s} y_i^2\right) = \sum_{i=1}^{n} z_i^2,$$

where the z_i are bilinear in the x_i and y_i with coefficients in some field F? When $F = \mathbb{R}$, a necessary condition on r, s and n can be given using singular cohomology. I will give the condition, the proof, and then discuss how one can use motivic cohomology to prove that the same condition is necessary for any F of characteristic not equal to 2.

Thursday, March 8$^{\text{th}}$, 2007 at 4:15 pm
Science Center 507