Isabel Cristina Ruiz (Binghamton)

There is No Tame Triangulation of the Infinite Real Grassmannian

Abstract for the Combinatorics and Number Theory Seminar 2003 March 31

The Grassmannian manifold G(k,n) is the collection of all k-dimensional vector subspaces of R^n, with the natural topology.

Tame triangulations of Grassmannians allow a process called ``combinatorialization'', where one constructs combinatorial structures from topological ones. They let us pass from real to combinatorial Grassmannians and from vector bundles to matroid bundles. The finite real Grassmannians G(k,n) have tame triangulations but this is not the case with the infinite real Grassmannians. This fact forces the use of delicate constructions in going from the finite case to the infinite case.

In this talk I will show why the infinite real Grassmannian has no tame triangulations.

This is work of L. Anderson and J. Davis.