"Symmetry groups come in many different flavors: finite groups, Lie groups, p-adic groups, loop groups, adelic groups,... A striking feature of representation theory is the persistence of fundamental structures and unifying themes throughout this great diversity of settings."

– David Ben-Zvi

The Trivial Notions Seminar

Proudly Announces

The Springer correspondence

A talk by

Cheng-Chiang Tsai

Abstract

Let G be a connected complex reductive group. The Springer correspondence matches any irreducible representation of the Weyl group of G with a unipotent orbit of G together with a piece of extra data. This is one of the earliest examples of what people now call geometric representation theory. Beginning with the definition of Springer fibers as complex varieties, we'll need an action of the Weyl group on their top cohomology groups without actually acting on the Springer fibers. After having an example about the flag variety as a special case of a Springer fiber, we shall introduce the notion of perverse sheaves, which is a much better category for dealing with our cohomology groups. With this powerful machinery at hand, we end by defining the required action of the Weyl group and sketch the proof of the Springer correspondence.

Wednesday March 25$^{\text{th}}$, at 1:00 pm

Science Center 112