

“Metaphor helps a human being to breathe in this rarefied atmosphere of Gods.”

— Yuri Manin

The Trivial Notions Seminar
Proudly Announces

The equivariant cohomology of a point

A talk by
Justin Campbell

Abstract

Where do Chern classes come from? I will explain why the answer is the equivariant cohomology of a point. The Chern-Weil isomorphism theorem identifies invariant polynomial functions on the Lie algebra of a compact group G with the G -equivariant cohomology of a point. Chern originally constructed these invariants using differential geometry, specifically the curvature form of some (typically non-algebraic) connection. I will give an algebraic construction of the isomorphism which amounts to a careful consideration of the Hodge filtration on algebraic de Rham cohomology. I will also explain an alternative proof with a topological flavor, which reduces the theorem to the case when $G = \mathbb{G}_m$ is the multiplicative group. Then the \mathbb{G}_m -equivariant cohomology of a point identifies with the cohomology of infinite-dimensional projective space, which is a polynomial algebra on a single degree two generator.

Thursday, October 29th, at 1:00 pm
Science Center 222