The Olivetti Club Presents
timothy e. goldberg

Tuesday 4:15 pm
31 January 2006
406 Malott

A little Lie algebra cohomology, if you please.

Given a Lie algebra and a module over it, we can produce a sequence of groups called the Lie algebra cohomology. As you might expect, the Lie algebra cohomology contains information about the de Rham cohomology of the associated Lie group. One very nice example of this is Nomizu's theorem, which describes a wonderful isomorphism between the cohomology of a nilmanifold and the cohomology of its associated Lie algebra. Lie algebra cohomology has the distinct advantage that it is often very easy to compute.

I will define Lie algebras and Lie algebra cohomology, and give examples. I will show how the de Rham cohomology of a smooth manifold can be viewed as an example of Lie algebra cohomology. Finally, I will talk about Nomizu's amazing theorem. I will try to present things at an introductory level, but the audience will probably find some basic knowledge of cohomology (or homology), multilinear algebra, and manifolds helpful.

Refreshments will be served at 3:45 pm in the math lounge.