

SPRING 2007

285 C (V. S. Varadarajan)

Chevalley groups and their complex representations

In the 1950's Chevalley created a theory of algebraic groups which included the classification of simple groups over any algebraically closed field. His theory led to the construction of new finite simple groups and was a major step in the classification problem of finite simple groups. This course aims to sketch some parts of this theory.

I shall explain how the theory over the complex field can be carried over to an arbitrary field. Once this is done, I shall study (the still incomplete) theory of *complex* representations of Chevalley groups over *finite fields*. I shall use as the main reference Robert Steinberg's famous unpublished Yale Notes *Lectures on Chevalley Groups*.

The only prerequisite is some familiarity with root space decompositions as in Serre's book *Complex Semisimple Lie Algebras*.

Time and place : MWF 10 AM, MS 5147.