1126-20-213        **Pramod N Achar\*** (`pramod@math.lsu.edu`), Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803-4918. *Representations of algebraic groups via algebraic topology.*

This talk will pursue two parallel threads: (i) computational questions in representation theory, and (ii) cohomology of topological spaces, especially certain subsets of Grassmannians and flag manifolds. Since the early 1980s, a number of major breakthroughs in representation theory have been made by showing that a difficult question in (i) can be turned into a tractable question in (ii), especially when working with complex coefficients. In the first half of the talk, I will discuss a few examples of this pattern.

The second half of the talk will be about representation theory with coefficients in a field of positive characteristic. The links between (i) and (ii) are considerably more difficult to study in this case, especially because some powerful tools available in the complex case (e.g., Hodge theory) are missing. Nevertheless, the past few years have seen a burst of new activity in this area, with new approaches to linking (i) and (ii), and new methods for computing on the topological side. I will survey some of the discoveries in representation theory that have emerged from this activity. This includes joint work with S. Makisumi, S. Riche, L. Rider, and G. Williamson. (Received January 13, 2017)