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*The Torus-Equivariant Cohomology of Nilpotent Orbits in Semisimple Lie Algebras*

Let  $G$  be a connected, simply-connected complex semisimple group with Lie algebra  $\mathfrak{g}$ . An adjoint  $G$ -orbit is called nilpotent if it lies in the nilpotent cone of  $\mathfrak{g}$ . This talk aims to introduce nilpotent orbits in the context of equivariant topology and geometry.

We will begin by introducing nilpotent orbits as objects studied at the interface of symplectic geometry, representation theory, and algebraic geometry. We will subsequently restrict our attention to two distinguished nilpotent  $G$ -orbits, the regular and minimal orbits. I will present some recent work on the equivariant cohomology of each orbit for the action of a maximal torus of  $G$ .