

Nilpotent orbits, representation theory and the Kostant-Sekiguchi correspondence

Abstract

Let \mathfrak{g} be a real simple Lie algebra. This talk will concern three families of nilpotent elements that are naturally associated to \mathfrak{g} . We will first briefly review the classification of conjugacy classes in each of the families, and describe the role of these conjugacy classes in the representation theory of \mathfrak{g} and related Lie groups. Next we will describe and study the Kostant-Sekiguchi correspondence which binds together conjugacy classes from the three families. We will present some open problems regarding this correspondence.