

Linear Algebraic Semigroups, Symmetric Spaces and their Schubert varieties

The purpose of these talks is to introduce a new class of spherical varieties, and to study their subvarieties that are similar to the Schubert varieties of a homogenous space. For this development we use the theory of linear algebraic semigroups along with representation theory.

A J -irreducible monoid M is the Zariski closure in $\text{End}(V)$ of the image of an irreducible representation of an algebraic group G . In our first lecture we will review the semigroup theory of M , and then characterize the J -irreducible monoids having (anti)-involutions.

In our second talk, after reviewing the theory of algebraic symmetric spaces and their wonderful compactifications, we will define and investigate J -irreducible embeddings of a symmetric space. Combining our analysis with some results of T.A. Springer on involutions, we will present a parametrization of the set of Borel orbits in these embeddings.

This talk is based on our joint work with Roger Howe and Lex Renner.