

title: Classifications of complex and real tensors

abstract:

In the 70's Vinberg developed the theory of so-called θ -groups. These are a class of complex algebraic groups acting on vector spaces. This theory made it possible to classify the orbits of such groups. Examples include several instances of algebraic groups acting on tensor spaces. Recently, in a joint work with Mikhail Borovoi and Hồng Vân Lê, we developed methods for obtaining orbit classifications of real θ -groups, based on computations in Galois cohomology. In this talk I will survey Vinberg's theory as well as our methods for the real case. Several examples will be given, such as the classification of four qubit states, and of three qutrit states.