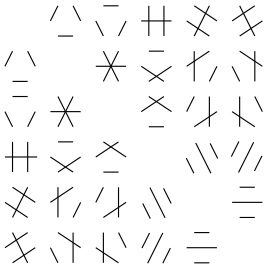
Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

Classification of four qubit and rebit states

Willen De Graaf
U. Trento, Italy

We consider the problem of classifying the orbits of $\mathrm{SL}(2,\mathbb{C})^4$ on the space $\mathbb{C}^2\otimes\mathbb{C}^2\otimes\mathbb{C}^2\otimes\mathbb{C}^2$. In quantum information theory this is known as the classification of four qubit states under SLOCC operations. We approach the problem by constructing the representation via a symmetric pair of maximal rank. This makes it possible to apply the theory of θ-representations developed by Vinberg in the 70's. The orbits are devided into three types: nilpotent, semisimple and mixed. The orbits of each type are classified separately. We also obtain the stabilizers of representatives of the orbits. The talk will end with some comments on the same problem over $\mathbb{R}$, known as the classification of four rebit states. This is joint work with Heiko Dietrich, Alessio Marrani and Marcos Origlia.

Weber 223
12 noon, Thursday (!), Apr 7, 2022
Colorado State University
Online via Zoom
`https://zoom.us/j/95321487441?pwd=Tlp4VG9pejZCekJmeDFFb1BzeWpsdz09`, Meeting ID: 953 2148 7441, Passcode: 722523

This is a joint Denver U / UC Boulder / UC Denver / U of Wyoming / CSU seminar that meets biweekly.
Anyone interested is welcome to join us at a local restaurant for dinner after the talks.

Colorado State University
Department of Mathematics
Fort Collins, Colorado 80523