

Talk: Non-commutative polynomial optimization - an overview

Speaker: Dr. Sabine Burgdorf– University of Konstanz

Abstract: Non-commutative polynomial optimization arises in several ways; the main idea is to extend scalar variables to matrix or operator valued variables which enforces the fact that the variables are not commuting in general. Each instance has its own advantages and challenges. They occur naturally e.g. in optimal control, or in quantum physics. After a prolonged overview presenting several possible

instances as well as some of the main techniques and results we will see some applications where we mainly focus on applications in quantum information theory to elucidate the consequences of the disproof of the Connes' embedding conjecture.

Since this talk is meant to be an introductory talk it will be accessible for students knowing the main concepts of polynomial optimization using sums of squares.