Abstract

Hilbert's 17th problem asks that whether every nonnegative polynomial can be a sum of squares of rational functions. It has been answered affirmatively by Artin. However, the question as to whether a given nonnegative polynomial is a sum of squares of polynomials is still a central question in real algebraic geometry. We solve this question completely for the nonnegative polynomials associated with isoparametric polynomials, initiated by E. Cartan. This talk is based on the joint work with J.Q. Ge.