Talk: Positivity

Speaker: Prof. Dr. Claus Scheiderer– University of Konstanz

Abstract: The course centers around the question whether positive polynomials have representations as sums of squares of polynomials. Here positivity is often understood relative to a given real algebraic or semialgebraic set. Accordingly, sums of squares will mean weighted sums of squares with properly chosen weight functions. The first two lectures will discuss Hilbert's classical results on sums of squares, together with modern generalizations. Lectures 3 and 4 will feature the archimedean Positivstellensatz. It has many applications, some of which we will sketch. The last lecture will bring further applications of sums of squares, e.g. to semidefinite optimization..