

Title: An Introduction to Circuitpolynomials and AM/GM-based Certificates of Nonnegativity

Speaker: Timo de Wolff (Technische Universität Braunschweig)

Abstract: Solving polynomial optimization problems corresponds on the algebraic side to certifying nonnegativity of real multivariate polynomials. The classical and most prominent certificates are sums of squares. However, other certificates of nonnegativity exist. In 1891, Hurwitz first suggested to use the AM-GM inequality to certify nonnegativity. This idea was vastly expanded by Reznick in 1989. In 2014 Ilmanen and I suggested a generalization, which we called "sums of nonnegative circuit polynomials (SONC)". A few months afterwards, Chandrasekaran and Shah suggested another certificate called "SAGE". Nowadays, we know that "SONC = SAGE".