

**Speaker:**

Claus Scheiderer (Konstanz)

**Title:**

Sums of squares in polynomial optimization

**Abstract:**

While deciding non-negativity of a real polynomial  $p$  is a notoriously hard question, deciding whether  $p$  is a sum of squares (sos) is much better accessible. This fact is employed in the semidefinite programming approach to polynomial optimization, where conditions of non-negativity are replaced by (relative) sos conditions. The success of this approach is based on well-known positivstellensätze from real algebra. My talk will start by recalling this background, and will then turn to the question of characterizing the feasible sets of semidefinite programming (former Helton-Nie conjecture). Sums of squares are playing the key role here.