

Matrix Computations & Scientific Computing Seminar

Organizer: James Demmel & Ming Gu

Wednesday, 12:00–1:00PM, 380 Soda

Sept. 14 **Jiawang Nie**, UC San Diego

Jacobian SDP Relaxation for Polynomial Optimization

Consider the global optimization problem of minimizing a polynomial function subject to polynomial equalities and/or inequalities. Jacobian SDP Relaxation is the first method that can solve this problem globally and exactly by using semidefinite programming. Its basic idea is to use the minors of Jacobian matrix of the given polynomials, add new redundant polynomial equations about the minors to the constraints, and then apply the hierarchy of Lasserre's semidefinite programming relaxations. The main result is that this new semidefinite programming relaxation will be exact for a sufficiently high (but finite) order, that is, the global minimum of the polynomial optimization can be computed by solving a semidefinite programming problem.