



復旦大學  
FUDAN UNIVERSITY

Applied Math  
Ph.D. Seminar

## Strong Variational Sufficiency for Nonlinear Semidefinite Programming and its Implications

**Speaker:** Shiwei Wang (University of Chinese Academy of Sciences)

**Time:** 2023-03-09, 16:10 to 17:00

**Location:** Rm 1801, Guanghua East Tower

**Advisor:** Chao Ding

**Abstract:** Strong variational sufficiency is a newly proposed property, which turns out to be of great use in the convergence analysis of multiplier methods. However, what this property implies for non-polyhedral problems remains a puzzle. In this talk, we will introduce the equivalence between the strong variational sufficiency and the strong second order sufficient condition (SOSC) for nonlinear semidefinite programming (NLSDP), without requiring the uniqueness of multiplier or any other constraint qualifications. Based on this characterization, the local convergence property of the augmented Lagrangian method (ALM) for NLSDP can be established under strong SOSC in the absence of constraint qualifications. Moreover, under the strong SOSC, we can apply the semi-smooth Newton method to solve the ALM subproblems of NLSDP as the positive definiteness of the generalized Hessian of augmented Lagrangian function is satisfied.