復旦大學
FUDAN UNIVERSITY

Applied Math
Ph.D. Seminar

An Adaptive High Order Method for Finding Third-Order Critical Points of Nonconvex Optimization

Speaker: Zihua Zhu (Shanghai University of Finance and Economics)

Time: 2021-10-25, 16:10 to 17:00

Location: Rm 1801, Guanghua East Tower

Advisor: Bo Jiang (Shanghai University of Finance and Economics)

Abstract: The optimization methods for computing higher-order critical points of nonconvex problems attract growing research interest recently, as they are able to exclude the so-called degenerate saddle points and reach a solution with better quality. Despite theoretical developments, the corresponding numerical experiments are missing. This talk proposes an implementable higher-order method, named adaptive high order method (AHOM), to find the third-order critical points. AHOM is achieved by solving an "easier" subproblem and incorporating the adaptive strategy of parameter tuning in each iteration of the algorithm. The iteration complexity of the proposed method is established. Some preliminary numerical results are provided to show that AHOM can escape from the degenerate saddle points, where the second-order method could possibly get stuck.