

THE UNIVERSITY



OF HONG KONG

Department of Mathematics

## Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

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# Truncated Aggregate Smoothing Newton Method for Minimax Problems

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on Thursday, February 25, 2010 at 2:30pm  
in Room 309, Run Run Shaw Building, HKU

### Abstract

Aggregate function is a useful smoothing function to the max-function of some smooth functions and has been used to solve minimax problems, linear and nonlinear programming, generalized complementarity problems, etc. The aggregate function is a single smooth but complicated function, its gradient and Hessian calculations are time-consuming. In order to gain more efficient performance of aggregate function method, we propose a truncated aggregate smoothing stabilized Newton method for solving minimax problems. At per iteration, only a small subset of the components in the max-function is aggregated, hence the number of gradient and Hessian calculations is reduced dramatically. The subset is adaptively updated with some truncating criteria, concerning only with computation of function values and not their gradients or Hessians, to guarantee the global convergence and, for the inner iteration, locally quadratic convergence with as few computational cost as possible. Numerical results show that the efficiency of the proposed algorithm.

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**All are welcome**

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