数学与系统科学研究院

计算数学所学术报告

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报告题目：

Some splitting method for convex optimization and monotone variational inequality

邀请人： 戴彧虹 研究员

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报告地点： 科技综合楼三层 311

计算数学所报告厅

Abstract：

We consider the convex programming problems with separable structures whose objective function is the sum of two or three functions without coupled variables. The alternating direction method of multipliers (ADMM) is a benchmark for these problems.We show that ADMM can be regarded as an application of PPA to the primal model with a customized choice of the proximal parameter for the two blocks problem. This PPA revisit on ADMM from the primal perspective also enables us to recover the generalized ADMM proposed by Eckstein and Bertsekas easily. A worst-case $O(1/t)$ convergence rate in ergodic sense is established for a slight extension of Eckstein and Bertsekas's generalized ADMM. And for the three blocks problem, the convergence of straightforward extension of ADM is proved not exist. We proposed a new splitting method whose implementation is almost as easy as that of ADM's straightforward extension and show the numerical efficiency. Finely we propose a new correction strategy for some first-order primaldual algorithms arising from solving total variation image restoration. With this strategy, we can prove the convergence of the algorithm under more flexible conditions than those proposed most recently. Some preliminary numerical results of image deblurring support that the new correction strategy can improve the numerical efficiency.

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