The Hong Kong University of Science and Technology

Department of Mathematics

<u>Seminar on Applied Mathematics</u>

Decomposition Methods for Computing D-Stationary Point

by

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<u>Abstract</u>
First, we presents a basic decomposition method for a broad class of multi-block nonsmooth optimization problems subject to coupled linear constraints on the variables, which motivated by block partitioned problems arising from group sparsity representation and generalized non-cooperative potential games. By taking advantage of the (negative) pointwise maximum structure in the objective, the developed algorithm and its convergence result are aimed at the computation of a blockwise directional stationary solution, which arguably is the sharpest kind of stationary solutions. In order to lessen the computational burden in each iteration, a probabilistic version of the algorithm is presented and its almost sure convergence is established. Second, we consider the linear convergence of algorithms for minimizing dierence-of-convex functions with convex constraints. We allow nonsmoothness in both of the convex and concave components in the objective function, with a nite max structure in the concave component. Our focus is on algorithms that compute (weak and standard) d(irectional)-stationary points as advocated in a recent paper by Pang, Razaviyayn and Alvarado (2016). Our linear convergence results are based on direct generalizations of the assumptions of error bounds and separation of isocost surfaces proposed in the seminal work of Luo and Tseng (1993), as well as one additional assumption of locally linear regularity regarding the intersection of certain stationary sets and dominance regions.

Date: **Wednesday, 14 August 2019**

Time: **3:00p.m. – 4:00p.m.**

Venue: **Room 3472, Academic Building (Lifts 25-26), HKUST**

All are welcome!