The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

On

An extension of the conjugate gradient method for linear and trust region constraints

by

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Abstract

The conjugate gradient method is highly useful for minimizing approximately a strictly convex quadratic function, because the main task of an iteration is only the multiplication of a vector by the n by n second derivative matrix, where n is the number of variables, and because far fewer than n iterations are usually sufficient when n is large.

This method can be extended, using properties of Krylov subspaces, to the case when the vector of variables has to remain within a prescribed distance of the starting point, which is a trust region constraint that allows the second derivative matrix to be indefinite. We also consider general linear constraints on the variables, noting that difficulties may arise from local minima. A procedure is proposed that makes only partial restarts when the active set of constraints is changed. It is intended to be efficient when n is large but it has not been tested yet. The speaker hopes to present some numerical results.

Date : 26 March, 2013 (Tuesday)
Time : 3:00 p.m. – 4:00 p.m.
Venue : HJ610, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***