Computing $f(A)b$ – the action of a matrix function on a vector

by

Professor Andreas Frommer
Bergische Universität Wuppertal

Abstract:

The matrix function $f(A)$ is defined if $f: \mathbb{C} \to \mathbb{C}$ is sufficiently smooth on the spectrum of $A$. If $A$ is large and sparse, then $f(A)$ is usually a dense matrix, why it is only feasible to compute $f(A)b$ instead of $f(A)$, and this in an iterative fashion. The standard approach uses approximations based on the Arnoldi process.

In this talk we present a convergence analysis for the case that $f$ is a Stieltjes function and $A$ is hermitian and positive definite or positive real. Particular attention will be given to the case where for storage or time complexity reasons we have to restart the Arnoldi process.

Date: 17 August 2015 (Monday)
Time: 2:00p.m. – 3:00pm
Venue: TU801, The Hong Kong Polytechnic University

*** ALL ARE WELCOME ***