MATEMATISKA INSTITUTIONEN
STOCKHOLMS UNIVERSITET
Avd. Matematik

SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Fredagen den 26 april kl. 11.00–12.00 presenterar Gazi Alam sitt arbete "Fast iterative solution of large scale statistical inverse problem".

Handledare: Boris Shapiro

Plats: Sal 32, hus 5, Kräftriket

Sammanfattning: We consider a large scale statistical inverse problem governed by a three dimensional parabolic partial differential equation within the framework of Bayesian inference with Gaussian noise and prior probability densities. The problem is formulated as a PDE constrained optimization problem. In addition to spectrally neutral prior, we consider 2nd and 4th order Gaussian smoothness prior with both Dirichlet and Neumann boundary conditions. In this thesis we apply a preconditioned Krylov subspace method focusing on the fast solution of the linear systems in saddle point form. The preconditioner is of block diagonal form that involves the effective approximation of the Schur complement. We present the numerical experiments illustrating the performance of the preconditioners and the effects of the regularization parameter for both noise and prior terms.

Alla intresserade är välkomna!