Numerical Analysis and Scientific Computing Seminar

Regularization by Krylov-Tikhonov methods

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Abstract: Krylov subspace methods have always played a central role in the iterative regularization of large-scale linear discrete ill-posed problems, which arise in a variety of scientific and engineering applications; we are particularly interested in image deblurring and denoising issues. In addition to a purely iterative approach to regularization, some "hybrid" Krylov-Tikhonov methods have also been derived, which merge an iterative and a variational (Tikhonov-like) approach to regularization. The purpose of this talk is to survey some classical Krylov and Krylov-Tikhonov methods, and to present some original ones, comparing their performance on some meaningful test problems. Particular emphasis will be posed on the strategies to be employed to set the regularization parameters and matrices in the Krylov-Tikhonov framework.

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Mathematics and Computer Science
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