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Seminar

New applications of inexact Krylov methods

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Abstract: In this talk I will present a new class of algorithms for separable nonlinear inverse problems based on inexact Krylov methods. In particular, I will focus on semi-blind deblurring applications, where we are interested in recovering an approximation of the original image and of a small number of parameters defining the blur. Classical methods in this setting involve solving a sequence of ill-posed and computationally expensive linear problems, and we propose using a new interpretation of inexact Krylov methods to solve this more efficiently. After giving a brief overview of the theoretical properties of these methods, as well as strategies to monitor the amount of inexactness that can be tolerated, the performance of the algorithms will be shown through numerical examples. Finally, I will also give an overview on current ongoing work on using inexact Krylov methods theory in a more general setting involving slowly varying linear systems.

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Mathematics
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