

Applications of Numerical Linear Algebra to Imaging Inverse Problems

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Abstract: In this talk I will describe applications and relevance of numerical linear algebra techniques to two different inverse problems in imaging. In the first, we discuss the reconstruction of a shape from its moments, whereas in the second, we discuss the problem of image resolution enhancement from video. In the former problem, interesting applications of generalized matrix eigenvalue problems play a role, whereas in the latter, preconditioning and fast methods for parameter estimation (such as cross-validation) are important. We illustrate both problems with several visual examples.