THE UNIVERSITY OF CHICAGO

Computational and Applied Mathematics & Statistics Student Seminar

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Hierarchical Bayesian Inverse Problems: A High-Dimensional Statistics Viewpoint

Tuesday, January 23, 2024
12:30 PM
Searle 240A

ABSTRACT

In this talk we will analyze hierarchical Bayesian inverse problems using techniques from high dimensional statistics. Our analysis leverages a property of hierarchical Bayesian regularizers that we call approximate decomposability to obtain non-asymptotic bounds on the reconstruction error attained by maximum a posteriori estimators. The new theory explains how hierarchical Bayesian models that exploit sparsity, group sparsity, and sparse representations of the unknown parameter can achieve accurate reconstructions in high-dimensional settings.