



THE UNIVERSITY OF
CHICAGO

Department of Statistics
STATISTICS COLLOQUIUM

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**Nonconvex Methods for High-Dimensional Regression
with Noisy and Missing Data**

MONDAY, January 27, 2014, at 4:00 PM

133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110

ABSTRACT

Noisy and missing data are prevalent in many real-world statistical estimation problems. Popular techniques for handling nonidealities in data, such as imputation and expectation-maximization, are often difficult to analyze theoretically and/or terminate in local optima of nonconvex functions — these problems are only exacerbated in high-dimensional settings. We present new methods for obtaining high-dimensional regression estimators in the presence of corrupted data, and provide theoretical guarantees for the statistical consistency of our methods. Although our estimators also arise as minima of nonconvex functions, we show the rather surprising result that all stationary points are clustered around a global minimum. Motivated by a fundamental connection between linear regression and inverse covariance matrices, we demonstrate an important application of our method for graphical model estimation with noisy and missing data.

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