THE UNIVERSITY OF CHICAGO

Department of Statistics

DISSERTATION PRESENTATION AND DEFENSE

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ROBUST ESTIMATION OF HIGH DIMENSIONAL TIME

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ABSTRACT

In recent years, extensive research has focused on the ℓ_1 penalized least squares (Lasso) estimators of high-dimensional regression when the number of covariates p is considerably larger than the sample size n. However, there is limited attention paid to the properties of the estimators when the errors and/or the covariates are serially dependent and/or heavy tailed. This thesis also proposes a new robust M-estimator for generalized linear models. We investigate properties of the proposed robust procedure and the classical Lasso procedure both theoretically and numerically under serially dependent covariates and/or errors. We also provide new Bousquet type inequalities for high-dimensional time series, which could be quite useful in empirical process of dependent data.