

Department of Applied and Computational Mathematics and Statistics Colloquium



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Parsimonious Modeling with Envelopes: From Multivariate to Multidimensional Statistics

Multidimensional data, such as networks and tensors, are frequently arising in a wide range of fields including neuroimaging, genomics, business, and social sciences. High-dimensionality, multidimensional structures, and high correlations intrinsically embedded in these data sets cause new challenges in analyzing them. Estimation and inferential techniques become inefficient or even inconsistent if they ignore the high-correlations among variables, heterogeneity caused by additional covariates, and intrinsic structural information in the forms of network and tensor. There is a pressing need to develop easy-to-interpret and parsimonious statistical models and methods to face these new challenges. In this talk, I will introduce a relatively new but also rapidly evolving idea in multivariate statistics: envelopes, whose goal is to increase efficiency in multivariate parameter estimation and prediction. I will first introduce the original idea of envelopes in multivariate linear model, and then illustrate the evolution of envelopes in statistical modeling of networks and tensors.

Monday, December 2, 2019
4:30 PM – 5:30 PM
127 Hayes-Healy Center

Colloquium Tea 4:00 PM to 4:30 PM 101A Crowley Commons Room