

KEYNOTE SPEAKER

**Regularized Estimation of High Dimensional Covariance Matrices
and Spectral Measures Having Sparse Structure in Various Senses**

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During the last few years a number of methods have been proposed for consistently estimating covariance matrices when both n , the number of multivariate observations and p the vector dimension are large. We focus on estimation in the Frobenius or operator norms (which imply convergence of eigenstructures)(Fan(2006), Huang et al.(2006), Furrer and Bengtsson(2006), Yuan and Lin(2007), Bickel and Levina(2004; 2007)) and on the direct estimation of eigenvalues and eigenvectors (Johnstone and Lu(2006), Paul(2007), elKaroui(2007)). All involve notions of sparsity of the population matrix in various ways. We shall review the various notions of sparsity, the methods proposed, their goals, advantages and disadvantages and properties established and remaining to be proven.

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