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*Model Selection in High-Dimensional Multivariate Linear Regression
Analysis with Sparse Inverse Covariance Structure*

Model selection criteria in multivariate linear regression analysis which identify relevant predictors play an important role in biometrics, marketing research, engineering, econometrics and many other related research fields. Recently, the high-dimensional data where the sample size n is comparable with the number of predictors K_n and the dimension of multiple responses p_n or larger than them often appear in these applications and classical model selection criteria are not applicable to such data. In this talk, we provide a model selection criterion which allows the high-dimensionality when the inverse covariance matrix is sparse. The consistency property is also provided when $\log p_n = o(n)$ and $r_n = O(n^\delta)$, $\delta < 1$ where r_n denotes the maximum size of the model included in candidate models.