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Shrinkage Estimation in Some Model Selection by LASSO in Multivariate Regression with Structural Changes

In this paper, we propose an estimation method in some multivariate regression models with multiple change-points occurring at unknown times. By a LASSO-type method, we estimate the parameter matrix and unknown change points, and we derive the asymptotic properties of the proposed estimators. Also, we consider the case where the parameter is suspected to be restricted to some linear subspaces. Further, we propose a class of shrinkage estimators and establish their asymptotic optimality. Finally, in order to illustrate the efficiency of the proposed method for small sample sizes, we present some simulation results.