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Shrinkage tuning parameter selection with a diverging number of parameters. (English)

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Summary: Contemporary statistical research frequently deals with problems involving a diverging number of parameters. For those problems, various shrinkage methods (e.g., the lasso and smoothly clipped absolute deviation) are found to be particularly useful for variable selection. Nevertheless, the desirable performances of those shrinkage methods heavily hinge on an appropriate selection of the tuning parameters. With a fixed predictor dimension, Wang and co-workers have demonstrated that the tuning parameters selected by a Bayesian information criterion type criterion can identify the true model consistently. In this work, similar results are further extended to the situation with a diverging number of parameters for both unpenalized and penalized estimators. Consequently, our theoretical results further enlarge not only the scope of applicability criterion type criteria but also that of those shrinkage estimation methods.

MSC:

[62J07](#) Ridge regression; shrinkage estimators (Lasso)

[62H99](#) Multivariate analysis

Cited in **109** Documents

Keywords:

[Bayesian information criterion](#); [lasso](#); [smoothly clipped absolute deviation](#)

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