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Breaking the curse of dimensionality in nonparametric testing. (English) Zbl 1418.62199
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Summary: For tests based on nonparametric methods, power crucially depends on the dimension of the conditioning variables, and specifically decreases with this dimension. This is known as the “curse of dimensionality”. We propose a new general approach to nonparametric testing in high dimensional settings and we show how to implement it when testing for a parametric regression. The resulting test behaves against directional local alternatives almost as if the dimension of the regressors was one. It is also almost optimal against classes of one-dimensional alternatives for a suitable choice of the smoothing parameter. The test performs well in small samples compared to several other tests.

MSC:

[62G10](#) Nonparametric hypothesis testing
[62G08](#) Nonparametric regression and quantile regression
[62G20](#) Asymptotic properties of nonparametric inference
[62P20](#) Applications of statistics to economics

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Keywords:

[curse of dimensionality](#); [testing](#); [nonparametric methods](#)

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