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Testing for additivity in nonparametric quantile regression

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Abstract In this article, we propose a new test for additivity in nonparametric quantile regression with a high-dimensional predictor. Asymptotic normality of the corresponding test statistic (after appropriate standardization) is established under the null hypothesis, local and fixed alternatives. We also propose a bootstrap procedure which can be used to improve the approximation of the nominal level for moderate sample sizes. The methodology is also illustrated by means of a small simulation study, and a data example is analyzed.

Keywords Nonparametric regression · Quantile regression · Bootstrap · Additive estimation