

**DATA DRIVEN SCORE TESTS FOR UNIVARIATE SYMMETRY BASED ON
NON-SMOOTH FUNCTIONS**

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Abstract: We propose data driven score rank tests for univariate symmetry around a known center based on non-smooth functions. A choice of non-smooth functions is motivated by very special properties of a certain function on $[0, 1]$ determined by a distribution which is responsible for its asymmetry. We modify recently introduced data driven penalty selection rules and apply Schwarz-type penalty as well. We prove basic asymptotic results for the test statistics. In a simulation study we compare the empirical behavior of the new tests with the data driven tests based on the Legendre basis and with the so-called hybrid test. We show good power behavior of the new tests often overcoming their competitors.

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Keywords and phrases: Testing symmetry, data driven score test, rank test, selection rule, hybrid test, Monte Carlo study.

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