

## Optimal Detection of Fechner-Asymmetry

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**Abstract:** We consider a general class of skewed univariate densities introduced by Fechner (1897), and derive optimal testing procedures for the null hypothesis of symmetry within that class. Locally and asymptotically optimal (in the Le Cam sense) tests are obtained, both for the case of symmetry with respect to a specified location as for the case of symmetry with respect to some unspecified location. Signed-rank based versions of these tests are also provided. The efficiency properties of the proposed procedures are investigated by a derivation of their asymptotic relative efficiencies with respect to the corresponding Gaussian parametric tests based on the traditional Pearson-Fisher coefficient of skewness. Small-sample performances under several types of asymmetry are investigated via simulations.

**Keywords:** Skewed densities, Signed-rank tests, Local asymptotic normality, Tests for symmetry.