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Robust Bayes estimation using the density power divergence

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Abstract The ordinary Bayes estimator based on the posterior density can have potential problems with outliers. Using the density power divergence measure, we develop an estimation method in this paper based on the so-called "$R^{(\alpha)}$-posterior density"; this construction uses the concept of priors in Bayesian context and generates highly robust estimators with good efficiency under the true model. We develop the asymptotic properties of the proposed estimator and illustrate its performance numerically.

Keywords Pseudo-posterior · Robustness · Bayes estimation · Density power divergence