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Summary: Although Bayesian inference is a popular paradigm among a large segment of scientists, including statisticians, most applications consider objective priors and need critical investigations. While it has several optimal properties, Bayesian inference lacks robustness against data contamination and model misspecification, which becomes a problem when using objective priors. As such, we present a general formulation of a Bayes pseudo-posterior distribution that leads to robust inference. Exponential convergence results related to the new pseudo-posterior and the corresponding Bayes estimators are established under a general parametric setup, and illustrations are provided for independent stationary and nonhomogeneous models. Several additional details and properties of the procedure are described, including estimation under fixed-design regression models.

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Bayesian linear regression; density power divergence; exponential convergence; logistic regression; robust Bayes pseudo-posterior

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References:

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