正規及びジェフェリーズ事前分布の冪に関する最適化
―主に指数分布族におけるカノニカルパラメータの場合

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Optimal powers of the Gaussian and Jeffreys priors are obtained so that they minimize the asymptotic mean square error of the linear predictor and the sum of the asymptotic mean square errors of associated parameter estimators. Conditions that the summarized mean square errors using powers of the priors are smaller than those by maximum likelihood are given. In the case of a scalar canonical parameter in the exponential family, a matching prior for the Jeffreys power prior is found, where the Wald confidence interval has second-order accurate coverage. The results are numerically illustrated using the categorical distribution and logistic regression.

For the full results corresponding to this abstract, see Ogasawara (2014).

Reference

Ogasawara, H. (2014). Optimization of the Gaussian and Jeffreys power priors with emphasis on the canonical parameters in the exponential family. *Behaviormetrika*, *41*, 195-223