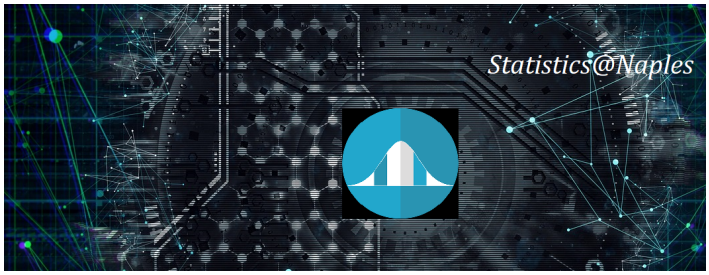

Contribution ID : **1** Type : **not specified**

Objective Shrinkage Priors Via Imaginary Data

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In this work, focus is given in the Bayesian variable selection problem for high-dimensional linear regression problems. The use of shrinkage priors, when the number n of available observations is less than the number p of explanatory variables, is a well-established method, which shares great theoretical and empirical properties. By using imaginary data and shrinkage priors as baseline priors, under the Power-Expected-Posterior (PEP) prior methodology, objective shrinkage priors are being created. In addition, we explore the idea of augmenting the imaginary design matrix in order to make it with orthogonal columns and thus to produce independent PEP-shrinkage priors, based on default baseline priors. Under this setup, properly chosen hyperpriors are placed on the power parameters of the PEP methodology, in order to produced mixtures of independent priors suitable for the variable selection problem when n « p. This second approach provides us with algorithmically flexibility and less time-consuming procedures. We check the theoretical properties of our proposed methods and we explore their behavior via simulated studies.

Keywords: Bayesian Variable Selection; Imaginary Data; Objective Priors; Shrinkage Priors

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