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Skew-Symmetric Approximations of Posterior Distributions

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In Bayesian statistics, deterministic approximations of the posterior distribution are often the preferred choice in the case of complex models, mainly for computational reasons. A common drawback of many of these approximations is that they usually belong to the Gaussian family and, therefore, can miss important characteristics of the posterior such as asymmetry. To alleviate this issue, this work proposes the use of a new family of approximations that provide accurate results, in a wide variety of different settings, and it is based on a simple, skew-inducing, perturbation of a Gaussian density. This new methodological proposal is accompanied both by rigorous theoretical studies and a real-world data example which confirms that our method is competitive also with respect to some state-of-the-art alternatives.

Joint work with Daniele Durante and Botond Szabo (both from Bocconi University).

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