On the Bayesian measures of uncertainty in infinite dimensional models

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Over the last 2 decades there have been many advances in the study of frequentist properties of Bayesian approaches in nonparametric or high dimensional models. Following the seminal papers of [1] on posterior concentration rates, there has been a large literature on posterior concentration rates in various families of sampling and prior models. Recently, more refined properties of the posterior distribution have also been investigated, leading to a better understanding of the frequentist properties of Bayesian measures of uncertainty such as credible regions.

In this talk, I will first present the general ideas behind posterior concentration rates. Then I will describe more precisely the recent advances behind the understanding of Bayesian measures of uncertainty . In particular I will present the Bernstein von Mises theorems obtained in semi parametric models, in regular and non regular models. In the former case the posterior distribution is supposed to be asymptotically Gaussian, while in the latter the asymptotic distribution is typically different. In the irregular model we have considered, the asymptotic posterior distribution is exponential.

Références

[1] GHOSAL, S., GHOSH, J. K. AND VAN DER VAART, A, *Convergence rates of posterior distributions*, Annals of Statistics, volume 28, pages 500-531, 2000.

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