Title: Default Bayesian Analysis with Global–Local Shrinkage Priors

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Time & Place:
Wednesday, October 12, 2016, 4:00–5:00pm
Room 331 SMI (Cookies and Coffee @ 3:30 in Rm 1210 MSC)

Abstract:
We provide a framework for assessing the default nature of a prior distribution using the property of regular variation, which we study for global-local shrinkage priors. In particular, we demonstrate the horseshoe priors, originally designed to handle sparsity, also possess regular variation and thus are appropriate for default Bayesian analysis. To illustrate our methodology, we solve a problem of non-informative priors due to Efron (1973), who showed standard flat non-informative priors in high-dimensional normal means model can be highly informative for nonlinear parameters of interest. We consider four such problems and show global-local shrinkage priors such as the horseshoe and horseshoe+ perform as Efron (1973) requires in each case. We find the reason for this lies in the ability of the global-local shrinkage priors to separate a low-dimensional signal embedded in high-dimensional noise, even for nonlinear functions.