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# Seminar

## MULTISCALE ANALYSIS OF BAYESIAN CART

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**Room Benvenuti | Campus S. Caterina**

# MULTISCALE ANALYSIS OF BAYESIAN CART

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## **Abstract**

This work affords new insights about Bayesian CART in the context of structured wavelet shrinkage. We show that practically used Bayesian CART priors lead to adaptive rate-minimax posterior concentration in the supremum norm in Gaussian white noise, performing optimally up to a logarithmic factor. To further explore the benefits of structured shrinkage, we propose the g-prior for trees, which departs from the typical wavelet product priors by harnessing correlation induced by the tree topology. Building on supremum norm adaptation, an adaptive nonparametric Bernstein–von Mises theorem for Bayesian CART is derived using multiscale techniques. For the fundamental goal of uncertainty quantification, we construct adaptive confidence bands with uniform coverage for the regression function under self-similarity. (Joint work with Veronika Rockova)