Statistics and Actuarial Science Seminar

Title: A Dirichlet Form approach to MCMC Optimal Scaling

Speaker: Wilfrid Kendall (University of Warwick)

Date: Thu 23rd April 2020 at 3:00PM

Location: Seminar Room SCN 1.25

Abstract: In this talk I will discuss the use of Dirichlet forms to investigate optimal scaling phenomena for Markov chain Monte Carlo algorithms (specifically, Metropolis-Hastings random walk samplers) under regularity conditions which are substantially weaker than those required by the original approach (based on the use of infinitesimal generators). The Dirichlet form method has the added advantage of providing an explicit construction of the underlying infinite-dimensional context. In particular, this enables us directly to establish weak convergence to the relevant infinite-dimensional diffusion. We also explore the behaviour of optimal scaling when regularity does not hold, using models based on fractional Brownian motion: intriguing examples of anomalous scaling then arise.

References: - Vogrinc, J., Kendall, W.S.. 'Counterexamples for Optimal Scaling of Metropolis-Hastings Chains with Rough Target Densities.' ArXiv 1910.09485. - Zanella, G., Bédard, M., Kendall, W. S. (2017). 'A Dirichlet Form approach to MCMC Optimal Scaling.' Stochastic Processes and Their Applications. 127 (12) 4053-4082. See also arXiv 1606.01528.