Speaker: Konstatinos Zygalakis, University of Edinburgh, United Kingdom

Title: Differential Equations, discrete approximations, and connections to optimization and sampling algorithms

Abstract: Optimization and Sampling problems lie in the heart of Bayesian inverse problems. The ability to solve such inverse problems depends crucially on the efficient calculation of quantities relating to the posterior distribution, giving thus rise to computationally challenging high dimensional optimization and sampling problems. In this talk, we will connect the corresponding optimization and sampling problems to the large time behaviour of solutions to (stochastic) differential equations. This connection allows us to understand better the properties of such algorithms and in addition allow us to develop more efficient algorithms. A number of different algorithms will be discussed both for optimization as well as sampling.