In my PhD, I focus on probabilistic solvers for differential equations. In particular, I worked on a probabilistic solver of ordinary differential equations which was recently proposed in [1]. This novel numerical scheme builds on the method proposed in [2] based on additive noise perturbations, and introduces concepts of geometric integration and robustness in the frame of probabilistic methods. My interests on probabilistic numerics mainly concern the analysis and development of probabilistic methods schemes for differential equations and their impact on the solution of Bayesian inverse problems.

REFERENCES:

[1] A. Abdulle and G. Garegnani, Random time step probabilistic methods for uncertainty quantification in chaotic and geometric numerical integration, submitted for publication (2018), https://arxiv.org/abs/1801.01340

[2] Conrad et al., Statistical analysis of differential equations: Introducing probability measures on numerical solutions, Stat. Comput. (2017)