Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

Thursday, 04 July 2024, 16:30
Lipschitz-Saal (LWK 1.016)

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Convergence rates of underdamped Langevin dynamics under weak functional inequalities

We study the long-time convergence behavior of underdamped Langevin dynamics, when the spatial equilibrium (and, potentially the velocity equilibrium) satisfies a weighted Poincaré inequality, which allows for fat-tail or subexponential potential (and/or kinetic) energies, and provide sharp estimates on the convergence rates in L^2-norm with L^∞ initial data. Our key step is a space-time weighted Poincaré-Lions inequality, which in turn implies a weak Poincaré-Lions inequality. Joint work with Giovanni Brigati (IST Austria), Gabriel Stoltz (Ecole des Pontes ParisTech) and Andi Q. Wang (Warwick).