

# Accelerating diffusions on manifolds

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## Abstract

We consider the asymptotic properties of some diffusion processes on manifolds. The main goal is to find the convergence rate of distribution, especially with a divergence free perturbation. It has been shown that by adding such perturbations, the convergence can be accelerated. How much can be done to the acceleration is mostly an open problem. We are showing that we can push the convergence infinitely fast on  $N$ -torus for Brownian motions by considering spectral gap of infinitesimal generators as its comparison criterion. Some results on different manifolds and with different comparison criteria will also be presented.