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On the sample paths of Brownian motions on compact infinite dimensional groups. (English)

The authors study the regularity of the paths of certain Brownian motions on the infinite-dimensional torus and other compact connected groups in terms of the intrinsic distance $d$ on the group. In particular, for each $\lambda \in [0, 1]$, examples of such processes $(X_t)_{t \geq 0}$ are constructed such that, for $t \to 0$, $d(X_t, X_0)$ roughly behaves like $t^{(1-\lambda)/2}$ almost surely. Moreover, an associated result on the modulus of continuity is derived. These results are quite different to the case of finite-dimensional Lie groups where, independent of the dimension like for the classical Brownian motion, a behavior of order $\sqrt{4 \ln(1/t)}$ holds.

Reviewer: Michael Voit (Dortmund)

MSC:
60J60 Diffusion processes
60B99 Probability theory on algebraic and topological structures
31C25 Dirichlet forms
47D07 Markov semigroups and applications to diffusion processes

Keywords:
infinite-dimensional compact groups; Brownian motion; regularity of paths

Full Text: DOI Euclid

References:


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