

**Slice sampling on Riemannian manifolds**  
**Doktorandenkolloquium**  
**am Mittwoch, 29.05.2024 ab 14:50 Uhr**  
**im HS 13, IM der Universität Passau, Innstr. 33**  
**von Mareike Hasenpflug**  
Betreuung: Prof. Dr. Daniel Rudolf

In numerical integration and Bayesian inference, the generation of samples from a given probability distribution is a frequent problem, that is often tackled with approximate sampling techniques such as Markov chain Monte Carlo (MCMC). Classically, these methods are constructed for distributions on Euclidean space. However constraints and dependencies appearing in the underlying problem may make it desirable to allow for a broader class of state spaces such as Riemannian manifolds. We investigate aspects of slice sampling based MCMC-methods for distributions on such manifolds. In particular we present a technique called geodesic slice sampling, which runs a 1-dimensional stepping-out and shrinkage based hybrid slice sampler on a random geodesic, and study its reversibility and ergodicity.