

Geodesic slice sampling on the sphere

Friday, 5 August 2022 11:30 (20 minutes)

We introduce a geodesic slice sampler on the Euclidean sphere (in arbitrary but fixed dimension) that can be used for approximate sampling from distributions that have a density with respect to the corresponding surface measure. Such distributions occur e.g. in the modelling of directional data or shapes. Under some mild conditions we show that the corresponding transition kernel is well-defined, in particular, that it is reversible with respect to the distribution of interest.

Moreover, if the density is bounded away from zero and infinity, then we obtain a uniform ergodicity convergence result.

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Session Classification: Session A7 Stochastics

Track Classification: Stochastics