Title: Point patterns on the sphere – statistical methodology and computation.

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Datasets of point patterns on a global scale require us to adapt both statistical tools, models and software from Euclidean space to the non-Euclidean setting on the sphere. We will describe both functional summary statistics such as the analogues of Ripley's K-function, the F-function, the G-function, and the J-function as well as various statistical models on the sphere. Such models include both the reference class of (inhomogeneous) Poisson processes and the interesting determinantal point processes.

Importantly, an efficient software implementation for working with point data on the sphere is a central part of this work.