

ACMS Statistics Seminar

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154 Hurley Hall

3:30 - 4:30 PM



Intrinsic Random Functions on the Sphere

Global-scale phenomena, of which there are a multitude of important applications ranging from climate science to epidemiology, can be viewed as random processes on the sphere. Many popular methods are based on the assumption that the underlying process is stationary, requiring rotation invariance. This assumption is often deemed unrealistic in practice. In this talk, I introduce a class of non-stationary processes, the intrinsic random functions (IRFs) on the sphere. We show that low frequency truncation plays an essential role. Based on this, we develop methods to estimate the degree of non-stationarity for processes on the sphere, which are demonstrated through simulation studies. In addition, IRF based kriging is constructed and shown to be equivalent to the spline smoothing formula in the corresponding reproducing kernel Hilbert space.

The Department of Applied and Computational
Mathematics and Statistics

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