

**University of California, Irvine
Statistics Seminar**

Modeling and Inference of Local Stationarity

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**Thursday, November 8, 2018
4 p.m., 6011 Bren Hall
(Bldg. #314 on campus map)**

Stationarity is a common assumption in spatial statistics. The justification is often that stationarity is a reasonable approximation to the true state of dependence if we focus on spatial data "locally." In this talk, we first review various known approaches for modeling nonstationary spatial data. We then examine the notion of local stationarity in more detail. To illustrate, we focus on the multi-fractional Brownian motion, for which a thorough analysis could be conducted assuming data are observed on a regular grid. A theoretical lower bound for the minimax risk of this inference problem is established for a wide class of smooth Hurst functions. We also propose a new nonparametric estimator and show that it is rate optimal. Implementation issues of the estimator including how to overcome the presence of a nuisance parameter and choose the tuning parameter from data will be considered. Finally, extensions to more general settings that relate to Matheron's intrinsic random functions will be discussed.

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