



## **Astronomy Program Opening Workshop August 22-26, 2016**

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“Nonparametric methods for Irregularly Spaced Non-Gaussian Spatial Data Analysis”

I consider a class of non-Gaussian spatial processes on an Euclidean space that are discretely sampled under a stochastic design giving a finite set of irregularly spaced spatial data values. Distributional properties of the commonly used tests and estimators exhibit very nonstandard behavior due to complex interactions among (a) the irregular spacings of the data locations, (b) relative growth rates of the sampling region and the sample size, and (c) the inherent dependence structure of the underlying spatial process. I will describe some recent advances on nonparametric inference techniques that are useful for analyzing such complex dependent data. Specifically, I will describe some Spatial Bootstrap and Spatial Empirical Likelihood methodology that can be used for inference in this context, without assuming that the spatial process is Gaussian.