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Climate Extremes Workshop
May 16-17, 2018

Lecture: *Semiparametric Density Estimation for Heavy Tailed Data*

Speaker: Surya Tokdar

Abstract:
I will introduce a transformation based model for probability densities that seamlessly conjoins a nonparametric function representing the bulk of the distribution with a parametric representation of the tails. This semiparametric model offers an exact characterization of the tail index. I will talk about methods for Bayesian inference from this model and present asymptotic frequentist guarantees of the resulting estimates. I will present illustrative examples of applications to forecasting extreme outcomes from limited data assumed to come from a heavy tailed distribution. I will discuss challenges and possible avenues of extending the model to multivariate density estimation.