

DEPARTMENT OF STATISTICS COLLOQUIUM SERIES

Texas A&M University

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**AN EXTENSION OF POWER LAW GENERALIZED  
COVARIANCE FUNCTIONS TO THE SPACE-TIME SETTING**

**ABSTRACT:**

By careful consideration of a series of examples for linear prediction of stationary processes in more than one dimension, I will motivate a condition on their spectral densities that I maintain most natural processes should satisfy. I will then consider a class of models for spatial-temporal processes that (1) satisfy this condition, (2) allow for arbitrary and different degrees of smoothness for the process in space and in time and (3) the corresponding (generalized) covariance function can be computed using series expansions. These generalized covariance functions can be viewed as an extension of the power law generalized covariance function, given by the interpoint distance raised to a power, and thus, perhaps provide a natural starting point for modeling the local behavior of spatial-temporal processes. An application to computer model output for a cooling tank in a nuclear reactor may be briefly considered.

**DATE:** Thursday, September 16, 2010

**TIME:** 3:45 p.m. – 4:45 p.m.

**PLACE:** Room 203, Mitchell Physics Building

Refreshments will be served in the Statistics Conference Room at 3:30 pm for those attending the seminar.