

Mathematics and Physics Seminar Series



Announcing
A Seminar Presentation
on Tuesday
February 6, 2018
from 3:00 pm - 3:45 pm in
Maxcy 203
at The University of New Haven

Models for Stationary Count Time Series

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Abstract: There has been growing interest in modeling stationary series that have discrete marginal distributions. Count series arise when describing storm numbers, accidents, wins by a sports team, disease cases, etc. Superpositioning methods have proven useful in devising stationary count time series having Poisson and binomial marginal distributions. Here, properties of this model class are established and the basic idea is developed. Specifically, we show how to construct stationary series with binomial, Poisson, and negative binomial marginal distributions; other marginal distributions are possible.

A second model for stationary count time series is then proposed. The model uses a latent Gaussian sequence and a distributional transformation to build stationary series with the desired marginal distribution. The autocovariance functions of the count series are derived using a Hermite polynomial expansion. This model has proven to be quite flexible. It can have virtually any marginal distribution, including generalized Poisson and Conway-Maxwell. As an application, we also study trends in the presence/absence of snow cover (not depths) in Napoleon, North Dakota from 1966-2015 via satellite data. Statistically, a two-state Markov chain model with periodic dynamics is developed to describe snow cover presence and its changes. The results indicate increasing snow coverage in Napoleon, North Dakota

Further Information

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