

Department of Mathematical Sciences

Colloquium

Candidate for Assistant Professor of Statistics Position

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Small integer time series and discrete renewal processes

Recently, modeling of count time series has received considerable attention. Count time series appear in economics, biology, meteorology and epidemiology just to name a few. More specific examples of counts are rare disease occurrences, animal sightings, and hurricane counts. The most popular technique for modeling Gaussian time series uses an autoregressive moving average (ARMA) recursion. When observations are small integers, ARMA models (and the many ARMA variants included) tend to give poor forecasts and inferences. If observations have a natural marginal distribution, many techniques have been proposed, including generalized linear regression, discrete ARMA (DARMA) and integer ARMA (INARMA). However, no one model class has emerged as the most robust, flexible, and parsimonious.

This talk will discuss DARMA, INARMA and other count modeling techniques; outlining their strengths and weaknesses. Then a new renewal theory based approach is investigated. Discrete-time renewal processes are used to generate stationary sequences with the particular marginal count structure sought. The renewal class effortlessly produces Poisson, binomial, and geometric marginal count series (among others) with flexible autocovariance structures. Issues of periodicities, long-memory and multiple dimensions are discussed, and a count model is fit for weekly rainfall data in Keywest, Florida.

Tuesday, Feb. 19, 2013, at 3 pm
in Bell Hall 143

The University of Texas at El Paso

Refreshment will be served 15 minutes prior to start of the colloquium

For further information, please contact Dr. Joan Staniswalis, 915-747-6761,
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