

The Conditional Central Limit Question For Sums of a Stationary Process With Applications to Time Series

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The talk has two parts, a description of non-parametric techniques for estimating an increasing trend in a time series and a review of recent progress on the conditional central limit question for sums of a stationary process. In the first part, isotonic estimators are suggested and illustrated with global warming data. The distribution of estimation error is needed for setting pointwise confidence bands, and this may be studied asymptotically. Recent and current work on this problem is described. A basic question that arises in obtaining these asymptotic distributions is: When are sums of a stationary process asymptotically normal? There has been recent progress on this question, as a result of which there are now simple sufficient and nearly necessary conditions for the convergence of the conditional distributions given the past to normality. This work is reviewed, set in some historical perspective, and current extensions are described.