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*Break Detection for a Class of Nonlinear Time Series Models*

**Abstract:** In this talk, we will consider the problem of detecting break points for a broad class of non-stationary time series models. In this formulation, the number and locations of the break points are assumed unknown. Each segment is assumed to be modeled from a class of parametric time series models for stationary processes. The minimum description length (MDL) principle is used as a criterion for estimating the number of break points, the locations of break of break points, and the parametric model in each segment. The best segmentation found by minimizing the MDL criterion is obtained using a genetic algorithm. The implementation of this approach is illustrated using autoregressive, GARCH, stochastic volatility, and generalized state-space models as the parametric model for the segments. Empirical results show the good performance of the estimates of the number of breaks and their locations for these various models.