ABSTRACT

The concept of the spectral envelope was introduced as a statistical basis for the frequency domain analysis and scaling of qualitative-valued time series. A major focus of this research was the analysis of DNA sequences. A common problem in analyzing long DNA sequence data is to identify coding sequences (genes) that are dispersed throughout the DNA and separated by regions of noncoding. Even within short subsequences of DNA, one encounters local behavior. To address this problem of local behavior in categorical-valued time series, we explore using the spectral envelope in conjunction with a dyadic tree-based adaptive segmentation method for analyzing piecewise stationary processes.