The authors introduce a derivation of the general framework for analyzing nonstationary time series. In Section 2, a complete, unified and simplified derivation of the finite element methods of time series analysis with bounded variation of the model parameters (FEM-BV) methodology is given. In Section 3, a unified strategy for model selection is provided. In Section 4, a prediction strategy for predicting the dynamics with motivation is discussed. Finally, some numerical examples and possible applications are given in Section 5.

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MSC:
62M10 Time series, auto-correlation, regression, etc. in statistics (GARCH)  Cited in 6 Documents
62M20 Inference from stochastic processes and prediction
62H30 Classification and discrimination; cluster analysis (statistical aspects)
65C60 Computational problems in statistics (MSC2010)

Keywords:
nonstationary data analysis; clustering; finite element method

Full Text: DOI Link