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Abstract

Frequency Domain Approach to Time Series Analysis

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The main purpose of this thesis is to provide a methodology to estimate the spectrum in order to detect the hidden periodicities of a given time series.

Chapter 1 introduces the basic concepts of time series analysis and discusses the general properties of stationary ARMA processes. Chapter 2 introduces the spectrum and deals with the basic spectral properties of ARMA processes. Chapter 3 introduces the periodogram and concerns with problems of estimating the spectrum. Chapter 4 deals with fitting an ARMA model to the data and computing the spectrum of the fitted model.