

The aim of this thesis is to find prediction for non-linear transformation of time series. First, under certain assumptions regarding the original time series, the autocovariance function and spectral density of the transformed time series are studied. General theorems are applied to concrete ARMA processes. Then general formulas for predictions of the transformed time series, which do not require knowledge of the autocovariance function of the transformed series nor its spectral density are presented. These formulas are applied to three concrete transformations and explicit formulas for ARMA processes are derived.

Three types of predictions (optimal, naive and linear) are compared in the terms of proportional increase of mean square prediction error. Explicit formulas for ARMA processes are verified by a simulation.