

# Robust Estimates for ARIMA Models and their Applications for Detection of Outliers

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## Abstract

When the observations follow some non-normal distribution, particularly one that has longer or heavier tails than the normal, the method of least squares may not be appropriate. Robust regression procedures designed to reduce the effect of the observations that would be highly influential if least squares were used.

In this research the concept of the robust regression will be adapted to the time series situation. To fully specify the method after introducing different types of outliers in time series data a new family of robust estimates for Box-Jenkins ARIMA models based on residual autocovariances function (RAF) will be introduced. Then the robustified portmanteau lack of test statistics will be defined. Finally, after some simulation study to approximate the distribution of these statistics, the application of them will be presented for detecting outliers in some time series data.