

Identifying Single Outlier in Linear Circular Regression Model Based on Circular Distance

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Abstract

In this paper, a new definition of circular residuals based on circular distance is proposed. The property of the new residuals enables us to perform two tasks: the diagnostic checking on the assumption of linear circular regression model and the identification of outlier in a circular regression. The identification is made by using several graphical and numerical methods including P-P plot, Q-Q plot, circular plot, C-statistic, D-statistic and M-statistic. Numerical and simulation studies show that the new residuals performed well for the above tasks.

Keywords: Circular distance, linear circular regression model, circular residual, outlier.

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