Predication of ULF geomagnetic field based on nonlinear system identification approach

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Nonlinear Auto Regressive Moving Average Model with Exogenous Inputs (NARMAX) was applied to the time series of terrestrial ULF geomagnetic field. The one-step-ahead (OSA) prediction model was built with Orthogonal Least Square (OLS) methodology, which can unveil significant and important quantities for geomagnetic field variation. As a result, the correlation coefficient between predicted and observed values was found to be around 0.8. Moreover, the model shows a good prediction performance. Furthermore, the model suggests some controlling parameter in relation with solar activity and inner radiation belt.

Keywords: ULF, Geomagnetic field variation, Nonlinear system identification, Prediction

