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1 Solar activity forecasting using spectral analysis and fuzzy descriptor models

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In this paper, a method based on fuzzy descriptor models and singular spectrum analysis (SSA) as one of the spectral analysis is proposed to forecast some of solar activity's indexes in the way that, a fuzzy descriptor model is optimized for each of the principal components obtained from singular spectrum analysis and the predicted values are recombined to make the solar activity time series as natural chaotic phenomena. The method has been applied to predict some of the solar activity indexes e.g. disturbance storm time (DST) and solar wind plasma. Results depict the power of the proposed method in prediction of solar activity in compare to the other methods.