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NON-STATIONARITY AND CROSS-CORRELATION EFFECTS IN THE MHD SOLAR ACTIVITY

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Abstract.

The analysis of turbulent processes in sunspots and pores which are self-organizing long-lived magnetic structures is a complicated and not yet solved problem. The present work focuses on studying such magneto-hydrodynamic (MHD) formations on the basis of flicker-noise spectroscopy using a new method of multi-parametric analysis. The non-stationarity and cross-correlation effects taking place in solar activity dynamics are considered. The calculated maximum values of non-stationarity factor may become precursors of significant restructuring in solar magnetic activity. The introduced cross-correlation functions enable us to judge synchronization effects between the signals of various solar activity indicators registered simultaneously.

Keywords: solar activity, Sun: magnetic fields, sunspots; methods: multi-parametric analysis, non-stationarity and cross-correlation effects.

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