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Detrended fluctuation analysis of pre-seismic electromagnetic emissions

S. Nikolopoulos (1), K. Karamanos (1) and **K. Eftaxias** (1)

(1) Physics Dept. University of Athens, Panepistimiopolis 15784, Athens Greece

We investigate scaling properties of pre-seismic electromagnetic emissions based on Detrended Fluctuation Analysis (DFA). Our results show that the DFA scaling exponents reveal the emergence of an epoch having a significant reduction of complexity as the catastrophic events is approaching. An independent analysis in terms of criticality, correlates the above-mentioned epoch of low complexity, with the final stage of earthquake preparation process i.e., the fracture of asperities that sustain the system. Laboratory and field experiments support this argument.

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