Abstract Submitted
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The Analysis of Spatiotemporal Chaos in Very Large Data Sets Generated by Electroconvective Experiments with Nematic Liquid crystals[1] JOSHUA LADD, Colorado State University, GYANU ACHARYA, Kent State University, J.T. GLEESON, Kent State University — Spatiotemporal chaos (STC) has been empirically observed in electrohydrodynamic convection in a planar layer of the nematic liquid crystal I52. The observed spatiotemporal dynamics is due to the interaction of two families of counter propagating waves that loose stability at onset. Thus it is possible to describe the patterns through a system of Ginzburg –Landau equations that governs the evolution of the envelopes of these waves (*Denin et al, Science 1996)*. In this work we extract the envelopes from spatiotemporal data generated by electroconvective experiments done at Kent State University using a demodulation procedure. Once obtained it is possible to separate spatial and temporal components of the dynamics by employing the singular value decomposition. This is done in order to study the chaotic nature of the pattern. Comparison is made with numerical STC obtained from computer simulations of the Ginzburg-Landau system derived from the weak electrolyte model (*Dangelmayr & Oprea, 2002)* of electroconvection.

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