Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Localized Resonances due to Spatial Forcing JONATHAN MCCOY, Cornell University, WILL BRUNNER, Max Planck Institute for Dynamics and Self-Organization, WERNER PESCH, University of Bayreuth, EBERHARD BODENSCHATZ, Cornell University, Max Planck Institute for Dynamics and Self-Organization — Periodic forcing provides a basic tool for probing the response of a spatially extended system to changes in its external environment. We report experimental results on spatially periodic forcing of thermally driven convection in a large aspect ratio fluid layer. This system displays a number of two-dimensional resonant pattern formation phenomena in which the system spontaneously breaks a symmetry in order to accommodate the forcing. A novel form of spatiotemporal chaos, consisting of localized resonance structures which mediate the transition from forced straight rolls to the generic state of spiral defect chaos, will be the focus of this presentation. This work is supported by the National Science Foundation under grant no. DMR-0305151 and by the Max Planck Society.

Jonathan McCoy
Cornell University

Date submitted: 01 Sep 2005 Electronic form version 1.4