

1014-35-202

Weijiu Liu* (weijiul@uca.edu), Department of Mathematics, University of Central Arkansas,
201 Donaghey Ave, Conway, AR 72035. *Spatiotemporal patterns and decay in diffusive fluid mixtures.*

Spatiotemporal patterns, the so-called strange eigenmodes, and their exponentially decaying intensity in fluid mixtures have been observed in experiments and numeric simulations. How the patterns can be described mathematically and how the decay depends on the mixture diffusivity have been open problems. In this talk, we present partial answers to these problems. We show that the mixture field has a Floquet expansion in terms of eigenmodes and then the patterns are determined by the slowest eigenmode. We also show numerically and analytically that the decay rate tends to zero as the diffusivity goes to zero under certain plausible conditions on the flows. (Received August 18, 2005)