

Workshop on Recent Advances in Dynamical Systems Analysis and Applications

June 4, 2012

Martin Golubitsky

Title: Patterns of Synchrony

Abstract: This talk will survey recent results on synchrony and phase-shift synchrony in equilibria and periodic solutions of coupled systems of differential equations. The mathematical questions were motivated by previous work on (quadrupedal) gaits and will be interpreted in terms of a generalized model for (binocular) rivalry proposed by Hugh Wilson.

Contact: mgolubitsky@mbi.osu.edu

Arnd Scheel

Title: Wavenumber selection in recurrent precipitation

Abstract: Motivated by the plethora of patterns observed in precipitation experiments starting with Liesegang's 1896 study, we investigate pattern formation in the wake of fronts in closed reaction-diffusion systems. We will briefly describe some models and the relation to phase separation models such as the Cahn-Hilliard equation and the Phase-Field System. We will then present results that characterize patterns formed in the wake of fronts.

Contact: scheel@umn.edu

Benoît Perthame

Title: Analysis of two nonlinear PDE models for spontaneous activity

Contact: benoit.perthame@ljl.math.upmc.fr

Reiner Lauterbach

Title: Equivariant bifurcation and irreducible group actions in \mathbb{R}^4

Abstract:

Contact: lauterbach@math.uni-hamburg.de

Yves Frégnac

Title:

Abstract:

Contact: fregnac@inaf.cnrs-gif.fr

Jean-Marc Gambaudo

Title: On the ubiquity of hierarchical structures

Abstract: The sequence of lunar cycles, the distribution of atoms in a quasicrystal and, at a larger scale the quasi-patterns observed in the Faraday experiment, are examples of the ubiquity of hierarchical structures in nature. In this talk, we will discuss these structures by focusing on the mathematical models associated with aperiodic tilings (such as Penrose tiling) and show the important role of the dimension on their stability.

Contact: jean-marc.gambaudo@inln.cnrs.fr