

Advances in Nonlinear Dynamics Abstracts

Saturday 3:15 – 5:15

Mary Sibler, Northwestern University
Nancy Rodriguez, Stanford University
Alethea Barbaro, UCLA
Brittany Erickson, Stanford University

Sunday 8:30 – 10:30

Mary Pugh, University of Toronto
Maria Pia Gualdani, UT Austin
Carola-Bibiane Schoenlieb, University of Cambridge
Juhi Jang, UC Riverside

Saturday 3:15 – 5:15

Spatio-temporal feedback control of unstable wave patterns
Mary Silber, Northwestern University

We extend the methods of Pyragas time-delayed feedback control of unstable periodic orbits to the situation where the unstable periodic orbits arise in a symmetry breaking Hopf bifurcation. We consider traveling wave patterns with spatio-temporal symmetries, as well as oscillator patterns for equivariant Hopf bifurcation problems.

TITLE

Nancy Rodriguez, Stanford University

ABSTRACT

An evolving network model for gang rivalries in Los Angeles
Alethea Barbaro, UCLA

Gang rivalries is a leading cause of violent crime in many cities. However, there is still much to be understood about how and why these rivalries form. We introduce an agent-based model coupled to an evolving network in order to explore how such rivalries might arise.

TITLE

Brittany Erickson, Stanford University

ABSTRACT

Sunday 8:30 – 10:30

A new result in blow-up for long-wave unstable thin film equations

Mary Pugh, University of Toronto

This talk will provide an introduction to long-wave unstable thin film equations of the form $\partial_t u = - (u^n u_{xxx})_x - B (u^m u_x)_x$. The exponents n and m determine whether or not finite-time blow-up of the solution might occur. In this talk, we present new results for the critical case $n=m+2$ on the line. This is joint work with Marina Chugunova and Roman Taranets.

A factorization method for non-symmetric linear operator: enlargement of the functional space while preserving hypo-coercivity.

Maria Pia Gualdani, University of Texas at Austin

We present a factorization method for non-symmetric linear operators: the method allows to enlarge functional spaces while preserving spectral properties for the considered operators. In particular, spectral gap and related convergence towards equilibrium follow easily by hypo-coercivity and resolvent estimates. Applications of this theory on several kinetic equations will be presented.

TITLE

Carola-Bibiane Schoenlieb, University of Cambridge

ABSTRACT

Compressible fluids with vacuum

Juhi Jang, UC Riverside

I'll discuss some vacuum states arising in gas dynamics. The rigorous results include the well-posedness of compressible Euler equations with vacuum free boundary and some open problems will be addressed.