

Brown / Boston University Dynamics & PDE Seminar

Spring 2017 Host: Brown University

Wednesday, April 12, 2017

The Division of Applied Mathematics at Brown University and the Department of Mathematics and Statistics at Boston University hold joint seminar events on topics related to PDE and dynamical systems, broadly construed. For more information, visit our website or contact the organizers:

<http://www.brown.edu/campus-life/events/joint-dynamics-seminar/>

Dave Kaspar (david_kaspar@brown.edu) & Kelly McQuighan (kmcquigh@bu.edu)

Location and parking information

170 Hope Street Room 108
Division of Applied Mathematics
Brown University
Providence, RI 02912

170 Hope Street is the new building to the immediate east of the Applied Mathematics “castle,” 182 George Street, with which you might be familiar. Contact Dave if you need to arrange parking nearby.

Program

2:00 – 2:30 Jonasz Słomka (MIT)

Spontaneous mirror-symmetry breaking induces inverse energy cascade in 3D active fluids

2:35 – 3:05 Vanja Dunjko (UMass Boston)

Superheated integrability and multisoliton survival through scattering off barriers

3:30 – 4:30 KEYNOTE: Bob Pego (Carnegie Mellon)

How to count fish using mathematics

Abstract: We study coagulation-fragmentation equations inspired by a simple model derived in fisheries science to explain data on the size distribution of schools of pelagic fish. Although the equations lack detailed balance and admit no H-theorem, we are able to develop a rather complete description of equilibrium profiles and large-time behavior, based on complex function theory for Bernstein and Pick functions. The generating function for discrete equilibrium profiles also generates the Fuss-Catalan numbers (derived by Lambert in 1758) that count all ternary trees with n nodes. The structure of equilibrium profiles and other related sequences is explained through a new and elegant characterization of the generating functions of completely monotone sequences as those Pick functions analytic and nonnegative on $(-\infty, 1)$. This is joint work with Jian-Guo Liu and Pierre Degond.

5:00 – 5:30 Mareike Haberichter (UMass Amherst)

Skyrmions and Nuclei

5:35 – 6:05 Yujia Zhou (BU)

Slow M-current helps an inhibitory cell phase-lock to faster gamma pulses

6:15 – Pizza

