Course Information for Math 691Y

- **Instructor**: Panos Kevrekidis
- **Class Hours**: F 2:30 p.m. - 3:45 p.m., LGRT 1528
- **Office Hours**:
  1. TuTh 11:00 a.m. - 12:30 p.m
  2. W 10:00 a.m. - 12:00 p.m. or
  3. by appointment.
- **Contact Info**:
  1. E-mail: kevrekid@math.umass.edu.
  2. Phone: 577-1977.
  3. Office: LGRT 1524.
  4. Mail Box: LGRT 1623D.
- **Grade**: Irrelevant for this course ! Instead key are:
  1. Participation During Class
  2. Interaction and Collaboration During the Week
  3. Creative Thinking and Research Mentality
- **Course Info**
- *Text*: No Required Text. Instead, we 'll use articles (including reviews), and book chapters with electronic access.

- *Rough Syllabus*:

  Team 1: Atomic Bose-Einstein Condensates

  1. Learn to Compute in 1d
  2. Identify Dark Solitons and Multi-solitons
  3. Analyze their Vibrational Modes
  4. Examine their Effective Equations
  5. Explore Comparison with Experiments
  6. Learn to Compute in Higher-d
  7. Identify Vortices and Multi-vortices
  8. Examine their Effective Equations
  9. Explore Comparisons with Experiments

  Team 2: Granular Crystals

  1. Learn to Compute in 1d
  2. Identify Traveling Waves in Monomer Crystals
  3. Analyze Linear Spectra and their Eigenvalues
  4. Identify Breather Modes Associated with Defects
  5. Identify Breather Modes Associated with Dimers
  6. Explore Modulational Instabilities in Dimers and Trimers
  7. Examine Shock Waves
  8. Explore Solitary Wave Collisions/Interactions
  9. Attempt Computations in 2d Hexagonal Crystals