Department of Mathematical Sciences

Spring 2016

Colloquium Series

Friday, February 26, 2016 at 2pm in Bell Hall 143

Note the unusual colloquium time

Candidate for Computational Science faculty position

Dr. Natalia Vladimirova

University of New Mexico

Modeling nonlinear phenomena in optics: from combining laser beams to turbulence

The nonlinear Schrodinger equation is one of the most universal models in physics, and describes wide classes of phenomena in optics, fluids, solids and plasmas. In this talk, I will describe how the model is applied to engineering applications and to fundamental physics problems. As an example of solving a practical problem, the scheme of combining powerful laser beams in a focusing media will be presented. Then, the model is applied to fundamental phenomena, including (i) catastrophic self-focusing (collapse), (ii) statistics of amplitude fluctuations in focusing media, (iii) interaction of a condensate (a coherent system-wide state) with wave turbulence in systems with a defocusing nonlinearity, and (iv) cascades of wave action and energy through scales of nonlocal interacting waves.

For further information, please contact Drs. Emil Schwab or Xiaogang Su, eschwab@utep.edu or xsu@utep.edu