University of Puerto Rico Mayaguez Campus
Faculty of Arts and Sciences
Department of Mathematical Sciences
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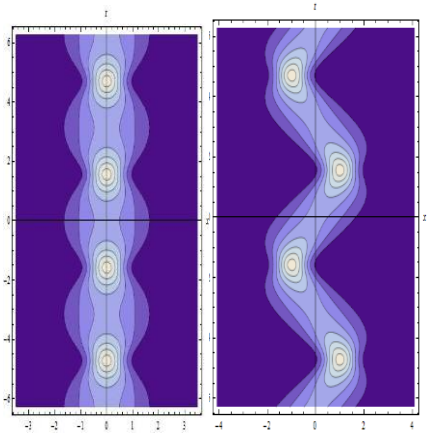
THE DEPARTMENT OF MATHEMATICAL SCIENCES PROUDLY PRESENTS

# COLLOQUIUM

FALL 2014

# Nonlinear evolution equations: Explicit solutions, transformations and its applications to Physics and Biology



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## ABSTRACT

A good portion of partial differential equations (PDE) is concerned with evolution equations (PDEs which involve time variable). Popular examples appearing in standard classes of physics include (linear) heat and Schrödinger equations; they model classical problems rising in physics, biology and finance. Other less popular but very important examples are nonlinear equations usually covered in graduate classes such as Fisher (modeling combustion and chemical kinetics) and nonlinear Schrödinger equations (standard model for Bose-Einstein condensates). We will show how self-similar solutions and other nice properties of these equations can be transferred to more complicated related models using transformations. We will discuss solutions for nonlinear Schrödinger equation with time-dependent coefficients (Bose-Einstein condensates).And a linear Schrödinger equation on inhomogeneous media such as lenses (Fourier optics).

Monzón Building, Room 201, 10:30 AM
Refreshments will be served
15 minutes before the colloquium, M213