

MATHEMATICS DEPARTMENT  
North Carolina State University

## DIFFERENTIAL EQUATIONS SEMINAR

Wednesday, August 30, 2006  
3:00 p.m. 330 Harrelson Hall

**Boris A. Malomed**

Department of Interdisciplinary Studies  
Faculty of Engineering  
Tel Aviv University

### “Soliton management in periodic systems”

During the past ten years there have been intensive theoretical and experimental studies of dynamics of solitons in periodic heterogeneous media, which are built as periodic concatenations of very different elements. Well-known examples are dispersion management in fiber optics, and, more recently, soliton transmission in photonic crystals. I will give a brief overview of basic results in the field, and will propose a concept of a general class of such systems. New systems belonging to the class have recently been identified in nonlinear optics (“split-step” and “tandem” models), and the transmission of solitary pulses in them was investigated. Similar soliton dynamics occurs in temporal-domain counterparts of such systems that are subject to strong time-periodic modulation. An important example is “Feshbach-resonance management” in Bose-Einstein condensates.

The talk is based on the recently published book “Soliton Management in Periodic Systems”, by B. A. Malomed, Springer, 2006.

**Graduate students are invited to attend.**

For questions, comments, and offers to talk, contact Steve Schechter, [schechter@math.ncsu.edu](mailto:schechter@math.ncsu.edu). Please visit the DE Seminar web page at [www.math.ncsu.edu/seminars.html](http://www.math.ncsu.edu/seminars.html).