THE UNIVERSITY of NORTH CAROLINA
GREENSBORO

Department of Mathematics & Statistics

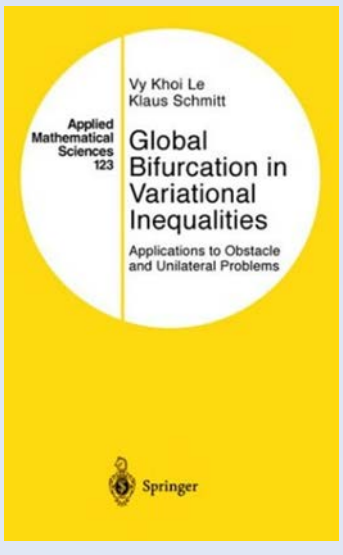
Helen Barton Lecture Series in Mathematical Sciences

Dr. Klaus Schmitt

Professor Emeritus of Mathematics
University of Utah

Professor Schmitt is a professor emeritus at the University of Utah. He received his B.S. from St. Olaf College in Minnesota, a M.S. and a Ph.D. from the University of Nebraska. He served as Department Chair and as Director of the University of Utah VIGRE Program.

His research research interests are in nonlinear analysis and the theory of partial differential equations focusing on nonlinear equations and variational inequalities, obstacle and unilateral problems, bifurcation theory and pattern formation, Hamiltonian systems, elliptic and parabolic equations, systems of reaction diffusion equations and nonlinear evolution equations. Together with his 57 collaborators he had been engaged in developing tools for the qualitative analysis, solution structure and solution geometry of such equations. He has twice been the recipient of the Alexander von Humboldt Senior U.S. Scientist Award (1978-79 and 1996-97).



He has published around 150 articles in reputed journals with 57 collaborators. He has had 17 Ph.D. students, 11 Masters students, 6 REU students, and has 6 mathematical grandchildren (to date). He held visiting positions at universities in Asia, Australia, Europe and South America.

An Overview of Variational Inequalities -Applications to Obstacle, Contact, and Unilateral Problems- Elliptic Problems Subject to Constraints

Abstract

The lectures will provide an introduction to the theory of variational inequalities, its history, and also its applications to problems in mechanics, such as obstacle, contact and unilateral problems. Applications, of a more theoretical nature are also given to PDE problems of elliptic type. The basic motivating principle for studying variational inequalities emanates from classical calculus ideas connected with the process of minimizing (or maximizing) functionals of several variables on given closed convex sets (the constraint sets). Such problems give rise to inequalities, whose solutions are, for certain classes of functionals, solutions of the given extremum problem. This, in a very natural way leads to the development of an existence (often also uniqueness) theory for more general inequalities. The great utility of the theory becomes apparent through the realization that many of the finite dimensional considerations may be extended to infinite dimensional spaces and thus allow for the treatment of certain obstacle problems associated with elliptic partial differential equations (e.g. the defection of a beam constrained by obstacles or, more generally, the defection of membranes subject to constraints, flux problems, etc.).

Lecture 1

Friday, April 12, 2013
Reception: Lounge, Petty 120, 3:30-4:00 PM
Lecture: Petty 150, 4:00 PM

Lecture 2

Monday, April 15, 2013
Reception: Lounge, Petty 120, 3:30-4:00 PM
Lecture: Petty 213, 4:00 PM

Lecture 3

Tuesday, April 16, 2013
Reception: Lounge, Petty 120, 3:30-4:00 PM
Lecture: Petty 150, 4:00 PM

For more information, please see: http://www.uncg.edu/math/talks/index.html
or contact Dr. Maya Chhetri at maya@uncg.edu.