6th Annual Women in Mathematics Day
Jean E. Rubin Memorial Lecture
Tuesday, October 2, 2012
4:30 p.m.
MATH 175

Refreshments will be served at 4 p.m. in the Math Library Lounge (3rd floor MATH Bldg.).

Speaker:

Barbara Lee Keyfitz
Ohio State University

Barbara Lee Keyfitz is the Dr. Charles Saltzer Professor of Mathematics at the Ohio State University, which she joined in January 2009, after 21 years at the University of Houston and four and a half years as Director of the Fields Institute.

Barbara Keyfitz received her undergraduate education at the University of Toronto and her M.S. and Ph.D. from the Courant Institute, New York University. Her research area is Nonlinear Partial Differential Equations. She has contributed to the study of nonstrictly hyperbolic conservation laws. With Herbert Kranzer, she developed the concept of singular shocks, which occur in some types of systems. With Suncica Canic and others, she was a pioneer in the mathematical theory of self-similar solutions of multidimensional conservation laws.

Keyfitz is a SIAM Fellow, a Fellow of the American Association for the Advancement of Science, and the recipient of the 2012 SIAM Award for Distinguished Service to the Profession. In 2012 she was the Noether Lecturer at the Joint Mathematics Meetings and the Kovalevsky Lecturer at the SIAM Annual Meeting. She has received the 2005 Krieger-Nelson Prize of the Canadian Mathematical Society and an honorary Doctor of Mathematics degree from the University of Waterloo.

Before joining the faculty of the University of Houston, Barbara Keyfitz was a faculty member in Engineering at Columbia and Princeton, and in mathematics at Arizona State University. She has also held visiting positions at the University of Nice, at Duke University, at Berkeley, at the Institute for Mathematics and its Applications, at the Fields Institute, and at Brown University. She was President of the Association for Women in Mathematics in 2005-06, is a Vice-President of the American Mathematical Society, and on October 1, 2011 she became President of the International Council on Industrial and Applied Mathematics for a four-year term.

The Role of Characteristics in Conservation Laws

Abstract

"Conservation laws" is the name given to a class of partial differential equations—quasilinear hyperbolic PDE, to be specific. These equations share the properties that on the one hand they are used to model many important processes in physics and engineering, and on the other hand they are very difficult to study. At the present time, there is no mathematical theory for conservation laws in more than one space dimension, and even in a single space dimension, general results are known only when the initial data are close to a constant. An appealing entry point into the theory is through the notion of characteristics, which govern many of the qualitative features of solutions and explain some of the paradoxes of their mathematical behavior. This talk will focus on ways that characteristics in systems of conservation laws give information about the systems being modeled.

Jean E. Rubin was Professor of Mathematics at Purdue University from 1967 until her death in 2002. She received a B.S. from Queen's College in New York City in 1948, an M.A. from Columbia in 1949, and a Ph.D. from Stanford in 1955. She taught at Oregon and Michigan State before coming to Purdue.
Professor Rubin was the author of more than 40 papers and five books in set theory and questions related to the axiom of choice.