UNIVERSITY OF RHODE ISLAND

Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Location: Lippitt Hall 204

Time: Thursday, November 9, 2017, 5:00pm

(refreshments at 4:50 p.m.)

The Nonlinear Eigenvalue Problem

by **Dr. Stefan Güttel**

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Abstract: Given a matrix-valued function F which depends nonlinearly on a scalar variable z, the basic nonlinear eigenvalue problem consists of finding those z for which $F(z)$ is singular. Such problems arise in many areas of computational science and engineering, including acoustics, control theory, fluid mechanics, and structural engineering.

In this lecture I will give an introduction to nonlinear eigenvalue problems and some of their interesting mathematical properties. I will discuss some applications and a new algorithm for their solution.

Bio-Sketch: Stefan Güttel is a Senior Lecturer in Numerical Analysis at The University of Manchester, UK. In 2010 he received his Ph.D. in mathematics from TU Freiberg, Germany. Before joining the NA group at The University of Manchester he was a postdoc at the University of Geneva (Switzerland) and the University of Oxford (UK). His current research interests include numerical analysis, scientific computing, industrial modeling, approximation theory, and parallel algorithms.