SEMINARIO DEL IMAL 2024
"Macías-Segovia"

Mohsen Tadi

"Computational Methods for Inverse Problems"

Resumen. In this presentation, we discuss a number of methods that can be used for inverse problems involving elliptic systems. The focus of the talk is on methodologies that can be used for various systems. We consider both Cauchy problems and inverse material identification problems. Cauchy problems appear in cases where information at part of the boundary is missing. Both classes of problems are severly ill-posed. In particular, we discuss a method based on multiple forward solution, a method based on proper solution space and methods based on sampling functions. We also present a new result for the inverse Helmholz problem. We apply these methods to problems in heat conduction or Laplace equation, and Helmholtz equation. The first two methods can also be applied to parabolic problems but will not be discussed in this talk. I will also discuss some advantages/disadvantages of some of these methods. In closing, I will discuss my current research efforts in other areas of applied mathematics and some open problems.

Bio. Mohsen Tadi got his PhD. In Mechanical Engineering from Virginia Tech in 1991. Between 1992 and 1996 he was a Postdoctoral Research Associate at Princeton University. Between 1996 and 1998 he was a Visiting Research Assistant Professor at the University of Illinois at Chicago. He held a position as Research Staff in the U.S. Department of Energy at the Federal Technology Center in the period 1998-1999. He was a Visiting Assistant Professor at the Department of Mathematics of the University of North Carolina at Charlotte between 1999 and 2000. He was also a Visiting Research Associate at the University of Freiburg, Germany in 2008 and a National Research Council Senior Research Fellow at the Department of Mathematics of the Naval Post-Graduate School between 2009 and 2011. During the period 2008-2020 he was an Associate Professor at the Department of Mechanical Engineering of the University of Colorado at Denver. Since 2020 he is an Associate Professor at the Department of Engineering of the Central Connecticut State University.

His research interests are Applied and Computational Mathematics Mechanics, Dynamics Control, Inverse Problems, Parameter Estimation, Solid/Fluid Interactions, Nonlinear Dynamics, Dynamics of Flexible Structures.

Viernes 3 de mayo, 15:30 horas

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