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Computational Mathematics Seminar Series

Mathematical Study and Finite Element Modeling of Invisibility Cloaks with Metamaterials**Jichun Li, University of Nevada Las Vegas**

Professor, Department of Mathematical Sciences

Lockett Hall 233
March 18, 2014 - 03:30 pm**Abstract:**

In the June 23, 2006's issue of Science magazine, Pendry et. al. and Leonhardt independently published their works on electromagnetic cloaking. In Nov 2006's Science, Pendry et. al. demonstrated the first practical realization of such a cloak with the use of artificially structured metamaterials. Since then, there is a growing interest in using metamaterials to construct invisibility cloaks. In this talk, I'll first give a brief introduction to metamaterials, then I'll focus on the mathematical study of some cloak models. Numerical simulations using finite element methods in both frequency domain and time domain will be presented. Some open issues will be mentioned at the end of my talk.

Speaker's Bio:

Jichun Li is a Full Professor of Mathematics at the University of Nevada, Las Vegas (UNLV). He earned his B.S. in Computational Mathematics from [Nanjing University](#) and his Ph.D in Applied Mathematics from [Florida State University](#). He worked 2 years (1998-2000) at [ICES of University of Texas at Austin](#) before he moved to UNLV in 2000. He was a summer faculty researcher at the [U.S. Air Force Research Laboratory](#) from 2003-2006. During August 2008 - July 2009, he served as Associate Director for [the Institute for Pure and Applied Mathematics \(IPAM\)](#) at UCLA.

Dr. Li is very interested in multidisciplinary research related to numerical analysis and scientific computing. His major research areas are on numerical methods (mainly [FEM](#)) for PDEs from different disciplines. His work includes singularly perturbed problems, surface and groundwater modeling, parallel computing with MPI and C++, image processing, radial basis meshless methods, inverse problems, high-order compact difference schemes, and Maxwell's equations in metamaterials. His research has been supported by the Air Force, NSF, NSF EPSCoR, and NASA EPSCoR.

