Mathematics Faculty Search

Computational Math

Candidate interview for assistant professor

Yulia Hristova

IMA/UM

www.ima.umn.edu/~hristova/

Hristova is a post doctoral associate at the IMA. She received her PhD in mathematics from Texas A&M.

Her research interests lie in the general area of numerical analysis and partial differential equations with emphasis on inverse problems, particularly those related to imaging techniques. Most recently she has been working on a Fourier Continuation - Alternating Directions (FC-AD) algorithm for Maxwell's equations. This work in progress is joint with Dr. Fernando Reitich. Another project I am currently involved in concerns the detection of illicit nuclear material. This project is part of a Homeland Security program.

IOWA STATE UNIVERSITY

TEACHING DEMO

401 or 448 Carver
Friday, February 17 at 9:00 a.m.

HOSPITALITY

404 Carver
Thursday, February 16 at 3:45 p.m.

COLLOQUIUM

401 Carver
Thursday, February 16 at 3:10 p.m.

Some inverse problems in computerized tomography

Computerized tomography (CT) is the name of a class of non-invasive imaging techniques in which the interior structure of an object is computed from external measurements. In order to recover an image of the interior one typically needs to solve an inverse problem.

While a number of CT methods are well studied and widely used (e.g. X-ray CT, MRI), new technologies are being developed with the aim to overcome the limitations of the existing ones.

In this talk I will give a brief overview of some of the mathematical ideas behind tomography and I will discuss several novel imaging techniques and the associated mathematics. Applications of these to medical imaging and national security will be presented.