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Frontiers of Scientific Computing Lecture Series

Five Trends in the Mathematical Foundation of Computational PDEs**Carsten Carstensen, Humboldt University of Berlin, Germany**Johnston Hall 338
August 23, 2012 - 03:30 pm**Abstract:**

This presentation concerns five topics in computational partial differential equations: (1) equivalence of first-order methods for the Poisson problem, (2) nonconforming and mixed finite element methods for the Stokes equations and their adaptivity, (3) adaptive methods for elliptic eigenvalue problems, (4) adaptive error control for obstacle problems, and (5) computational microstructures with degenerate convex minimization.

The overall goals for the work in these topics are reliable error control and efficient simulation. The presentation will also demonstrate the surprising advantages of nonstandard discretizations over conforming finite element schemes.

Speaker's Bio:

Professor Carsten Carstensen is a MATHEON Research Professor in Applied Mathematics, Scientific Computing and Numerical Analysis at the Humboldt University of Berlin, where he is also the Director of the Center of Computational Sciences Adlershof. Professor Carstensen has over 170 publications. He received the Richard-von-Mises Prize from GAMM in 1995 and is a member of the Akademie der Wissenschaften und der Literatur Mainz. He is currently the editor-in-chief of Computational Methods in Applied Mathematics, and is an editor of the SIAM Journal on Numerical Analysis and a past editor of Mathematics of Computation. He served on the board of GAMM and was the founding chair of the GAMM subcommittee on the Analysis of Microstructures.

