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Special Guest Lectures

Some remarks on nonconforming finite element methods

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Johnston Hall 338
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Abstract:
In this talk we will discuss some recent developments in nonconforming finite element methods and their applications. In 1973 the linear nonconforming finite elements for triangles or tetrahedrons and a cubic nonconforming element for triangles by Crouzeix and Raviart. Such nonconforming elements have been proved very effectively applicable to fluid mechanics and elasticity. Corresponding quadrilateral elements have been proposed by Han (1985), and Rannacher and Turek (1992), and later the DSSY nonconforming element introduced by Douglas et al. in 1999, which has been applied to solving Maxwell and Helmholtz equations. Later, Park and Sheen (2002) developed P1 -nonconforming quadrilateral nonconforming elements, which has only 3 degrees of freedom for quadrilaterals instead of 4 degrees of freedom. Morley elements in higher dimension has been developed by Ming and Xu (2006) for fourth-order problems. while a quadratic nonconforming element on rectangle has been proposed recently by Lee and Sheen (2006). Several comparative aspects of the nonconforming elements and their applications to topology optimiation and Maxwell

Speaker's Bio:
Professor Sheen is currently a Professor of Mathematics at Seoul National University (SNU); he graduated from SNU with BS (1981) and MS (1983) and joined the SNU in 1993. He worked for Samsung for a year until he continued to study at Purdue University, where he majored in Numerical Analysis and obtained PhD in 1991. Dr. Sheen has been the first Chair in the Interdisciplinary Program in Computational Science and Technology at SNU and actively involved in interdisciplinary collaborations with engineering faculties. He was an International Fellow at the University of New South Wales in 1999 and currently visiting Purdue University. He visited the Istituto di Analisi Numerica del CNR and University of Pavia during 1991-1992. His research areas include Numerical Analysis and Parallel Computation and their applications to Wave Propagations, Electromagnetism, Inverse Problems, Geophysics Topology Optimization, and so on. He is currently interested in nonconforming finite elements and multiscale modeling and computation, and computational cell biology. Dr. Sheen was awarded Lotte Fellowship in 1997-1999 and the best publication prise in mathematics from Korean Federation of Science and Technology Societies in 2002. He serves as associate editorial board members of Journal of Korean Mathematics Society, International Journal of Numerical Analysis and Modeling, and Journal of Computational Mathematics. He is a vice president of EASIAM (East Asia Section of SIAM) for the period 2007-2008.

Refreshments will be served.
This lecture has a reception.