

Joint MECHANICAL & AEROSPACE ENGINEERING SEMINAR and APPLIED MATHEMATICS SEMINAR

Principles of compatible discretizations

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In this talk, based on joint work with M. Hyman (Los Alamos) and M. Gunzburger (Florida State), I will use the classical Kelvin and Dirichlet principles and their associated PDEs to demonstrate the basic principles of compatible (mimetic) discretizations. I use duality to explain why collocated discretizations don't work for mixed Galerkin methods and why such methods require staggered or dual-primal grids. Then I present three basic types of compatible methods for the model equations that give rise to mixed Galerkin, co-volume and least-squares type methods.

Date: September 2nd (Friday), 2005

Time: 2:00 pm-3:00 pm

Place: Room 210, Woolf Hall (Mechanical Eng. Bidg.), UTA

Dr. Bochev is a Principal Member of the Technical Staff at Sandia National Laboratories in Albuquerque. He earned his Magister of Mathematics degree from the University of Sofia, Bulgaria in 1987 and his PhD from Virginia Tech in 1994. After three years as a research associate at the Bulgarian Academy of Sciences he came to Virginia Tech for his advanced study. His thesis was awarded the SIAM Student paper prize for 1994. His research interests are in the area of applied mathematics and numerical analysis with particular focus on finite element methods for partial differential equations. Before joining Sandia in 2001, Dr. Bochev was Assistant and then Associate Professor of Mathematics at the University of Texas at Arlington.