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CBC talk: Stability, Consistency, and Convergence: Modern Variations on a Classical Theme - June 10, 2009

Prof. Douglas N. Arnold, the current president of SIAM, visited Simula and gave a presentation where he reviewed key elements in numerical computing and showed how these could be generalized to make classically hard problems tractable.

Total number of participants: 29
 Total number of guests outside of CBC: 4
 Number of different nationalities represented: 6
 Total number of speakers: 1
 Total number of talks: 1

Talk: Stability, Consistency, and Convergence: Modern Variations on a Classical Theme



By Prof. Douglas N Arnold, the current president of SIAM.

Abstract

Consistency and stability of numerical discretizations are the basic leitmotifs of numerical analysis, and the idea that consistency and stability imply convergence is a principle theme, particularly in the numerical solution of partial differential equations. But both consistency and stability can, in some situations, be more subtle and elusive than they might appear. Even seemingly simple examples of numerical discretizations can yield unexpected - and even, in real life applications, tragic - results. The development of consistent, stable numerical methods remains elusive for important classes of problems.

We will survey these ideas from their origins in the precomputer era to the present day, via a variety of examples. We finish by describing a new approach, the finite element exterior calculus, which borrows tools from geometry and topology to design and elucidate stable finite element methods.

Place: Storstua at Simula Research Laboratory
 Time: 10.00 am

What	▪ Talk
When	Jun 10, 2009 from 10:00 AM to 11:00 AM
Where	Storstua @ Simula
Contact Name	Hans Petter Langtangen
Attendees	Martin Alnæs Douglas Arnold Rolv Erlend Bredeesen Xing Cai Stuart Clark Peter Fick Johan Hake Susanne Hentschel Olmar al Khayat Hans Petter Langtangen Megan Lewis Anders Logg Marius Lysaker Alf Emil Løvgren Molly Maleckar Kent Andre Mardal Andre Massing Harish Narayanan Harald Osnes Hans E. Plesser Marie Rognes Tomas Syrstad Ruud Ola Skavhaug Joakim Sundnes Kirsten ten Tusscher Aslak Tveito Kristian Valen-Sendstad Sam Wall Wenjie Wei
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