

## Scientific Computing

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## FEniCS'09: The Annual FEniCS Workshop - June 11-12, 2009

CBC hosted the fourth FEniCS workshop on June 11-12, 2009. This is an annual workshop bringing together FEniCS developers and users. The talks presented the latest achievements in FEniCS, successful applications, future demands, and the status of other similar packages. Notable speakers included Scott Baden (UCSD), Johan Hoffman (KTH), Michael Holst (UCSD), Claes Johnson (KTH), Robert C. Kirby (Texas Tech), Mirko Maraldi (University of Bologna), Christophe Prud'homme (Universite de Grenoble), Garth N. Wells (University of Cambridge) and Ragnar Winther (Center of Mathematics for Applications (CMA), University of Oslo).

Total number of participants: 38  
 Total number of guests outside of CBC: 26  
 Number of different nationalities represented: 17  
 Total number of speakers: 18  
 Total number of talks: 18



FEniCS is a collaborative effort towards the development of free software for automated solution of differential equations. Since its inception in 2003, the FEniCS project has come a long way and many of our software components are now starting to mature. As a result, FEniCS is now becoming more accessible and useful to a wider audience. As an example, we are approaching the release of version 1.0 of DOLFIN, the finite element problem solving environment developed as part of FEniCS, the release of which will mark an important milestone for FEniCS.

This workshop will be an opportunity to hear about these recent developments and to discuss and map out future directions.

### Program

#### Thursday June 11

- **09.30 - 10.00** Registration
- **10.00 - 10.30** Introduction: Simula Research Laboratory
- **10.30 - 11.15** *Coping with Technological Change*  
Scott Baden, University of California, San Diego, USA
- **11.15 - 12.00** *Finite Element Bilinear Forms using Simplicial Bernstein Polynomials*  
Robert Kirby, Texas Tech University, USA
- **12.00 - 13.15** Lunch
- **13.15 - 14.00** TBA  
Claes Johnson, Royal Institute of Technology, Stockholm, Sweden
- **14.00 - 14.20** *Adaptive Finite Element Approximation of Geometric PDE*  
Mehdi Nikbakht, Delft University of Technology, The Netherlands
- **14.20 - 14.40** *FEniCS Developments driven by Solid Mechanics Problems*  
Kristian Ølgaard, Delft University of Technology, The Netherlands
- **14.40 - 15.00** *Exact Polynomial Solvers for FEM*  
Andy Terrel, University of Chicago, Chicago, Illinois, USA
- **15.00 - 15.20** Break
- **15.20 - 15.40** *FEniCS in Applied Research and Education*  
Johan Hoffman, Royal Institute of Technology, Stockholm, Sweden
- **15.40 - 16.00** *Dimension-Independent FEM*  
Peter Brune, University of Chicago, Chicago, Illinois, USA
- **16.20 - 16.40** *An Adaptive G2 Method for the Turbulent Compressible Flows*  
Murtazo Nazarov, Royal Institute of Technology, Stockholm, Sweden
- **16.40 - 17.00**
- **17.15 - 19.15** FEniCS Open Ping Pong Tournament (Alternative: Soccer)

- **From 19.30** Dinner at Fossekallen, Vollsveien 13, 1366 Lysaker

### Friday June 12

- **09.00 - 09.45** *A Computational Platform for Galerkin Methods, Application to (high-order) Fluid-Structure*  
Christophe Prud'homme, Universite de Grenoble
- **09.45 - 10.30** *Adaptive Finite Element Approximation of Geometric PDE*  
Michael Holst, University of California, USA
- **10.30 - 11.00** Break
- **11.00 - 11.20** *3D Fluid-Structure Interaction with Local Mesh Modification*  
Johan Jansson, Royal Institute of Technology, Stockholm, Sweden
- **11.20 - 11.40** *Patient-Specific Hemodynamics in FEniCS*  
Kent-Andre Mardal, Simula Research Laboratory, Oslo, Norway
- **11.40 - 12.00** *Preconditioning Discretizations of Systems of Partial Differential Equation*  
Ragnar Winther, CMA, University of Oslo, Norway
- **12.00 - 13.15** Lunch
- **13.15 - 14.00** *The Unified Form Language*  
Martin Alnaes, Simula Research Laboratory, Oslo, Norway
- **14.00 - 14.20** *Running FEniCS on the Blue Gene*  
Niclas Jansson, Royal Institute of Technology, Stockholm, Sweden
- **14.20 - 14.40** *Implementing a Phase Field Model in DOLFIN*  
Mirko Maraldi, University of Bologna, Italy

For more information visit the FEniCS web page .

Participation is free and everyone interested in the FEniCS project is invited to this workshop.

**Please register on [forms.simula.no/fenics09](http://forms.simula.no/fenics09) before May 1. Remember to indicate if you want to give a talk.**

FEniCS'09 is hosted by the Center for Biomedical Computing at Simula Research Laboratory.

For further information, contact one of the organizers.

### Local Organizing Committee:



Anders Logg <[logg@simula.no](mailto:logg@simula.no)>

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Practical information for first time visitors.

<b>What</b>	▪ Seminar
<b>When</b>	Jun 11, 2009 09:00 AM to Jun 12, 2009 04:00 PM
<b>Where</b>	Simula Research Laboratory
<b>Contact Name</b>	Anders Logg
<b>Attendees</b>	Achim Schroll Anders Logg Andre Massing Andy Terrel Aron Wahlberg Christophe Prud'homme Claes Johnsson Emil Løvgren Garth Wells Hans Petter Lantangen Harish Narayanan Jeanette Sp. hler Joakim Sundnes Johan Hake johan Hoffman Johan Jansson Kent-Andre Mardal Kristian Ølgaard Kristoffer Selim Marie Rognes Martin Alnaes Megan Lewis Mehdi Nikbakht Michael Holst Mikael Mortensen Mirko Maraldi Molly Maleckar Murtazo Nazarov Niclas Jansson Ola Skavhaug Peter Brune Peter Fick Ragnar Winther Robert Kirby Scott Baden Shawn Walker

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