Scientific Computing

CBC Workshop on High-Performance Computing and Biomedical Flows - May 19-21, 2008

CBC will hold a three-day summer conference May 19-21, focusing on biomedical flows and high-performance computing. Our aim is to strengthen the interaction between the CBC staff, external collaborators and international domain experts, while also spreading useful knowledge and technologies to a broader scientific audience. Within the biomedical flows theme, we will in particular focus on the flow of blood in the Circle of Willis and its consequence on aneurysm development and rupture, the cerebrospinal fluid flow associated with the Chiari I malformation and the fluid-structure interaction problem in the mitral valve. Several topics within high-performance computing, a fundamental supporting technology for all the CBC research activities, will be presented to the audience. The HPC topics include sustainable software development, component-based computational frameworks, parallel programming, and use of modern programming languages and hardware.

Total number of participants: 37
Number of different nationalities represented: 10
Total number of speakers: 15
Total number of talks: 16

Monday, May 19 - High-Performance Computing

Place: "Storstua" at Simula

10.00-10.15 Hans Petter Langtangen (Simula, Univ. of Oslo): *Welcome & introduction*

10.15-11.00 Lutz Gross (Univ. Queensland, Australia): *Solving PDEs in Geosciences Using Python*

11.00-11.45 Damian Rouson (Sandia National Lab, USA): *Design patterns for multiphysics modeling in Fortran 2003 and C++*

11.45-13.00 Lunch / Break

13.15-14.00 Tony Drummond (Lawrence Berkeley National Lab, USA): *The U.S. DOE Advanced CompuTational Software Collection (ACTS)*

14.00-14.45 Ben Allan (Sandia National Lab, USA): *Progress in Rapid, Sustainable Development for Complex HPC Software*

14.45-15.00 Coffee

15.00-16.30 Ben Allan (Sandia National Lab, USA): *Hands-on tutorial on Bocca: a new tool for reducing the complexity of creating multilanguage scientific applications*

The participants are encouraged to bring their lap-tops!

19.00: Dinner

Tuesday, May 20 - Applications in Biomedical Flow

Place: "Storstua" at Simula

9.00- 9.30: Hans Petter Langtangen (Simula): *About Center for Biomedical Computing*

9.30-10.15: Victor Haughton (University of Wisconsin): *Hyperkinetic CSF flow in the upper spinal canal: a consequence of the Chiari I malformation and a cause of spinal cord cystic changes*

10.15-10.35: Victorien Prot and Bjørn Skallerud (NTNU): *Solid versus membrane finite elements in analysis of the mitral valve*

11.00-13.00 Lunch / Break

13.00-13.30: Jørgen Isaksen (University Hospital of North Norway): *Risk for aneurysm development, growth and rupture - clinical implications of simulaton technology*

13.30-14.00: Svein Linge (Simula): *Simulating the cerebrospinal fluid flow associated with Chiari I malformation in idealized geometries*

14.00-14.45: Charles Strother (University of Wisconsin): *Intracranial aneurysms: imaging and simulations of blood flow. Why is this worth exploring?*

16.10-20.00 (Free) trip around the Oslo fjord by boat (food included)

Wednesday, May 21 - Applications in Biomedical Flow II

Place: "Storstua" at Simula

9.00- 9.45: Luca Antiga (Mario Negri Institute for Pharmacological Research, Ranica (BG), Italy.) : *Computational hemodynamics: from individual models to clinical relevance*

9.45-10.30: Bertil Romner: TBA

10.30-11.00: Oddrun Myklebust: *Simulating the blood flow in a patient-specific by-pass surgery*

11.00-13.00 Lunch / Break

13.00-13.45: Jingfeng Jiang (University of Wisconsin): S*imulations of intracranial aneurysms: Varying physiological parameters and imaging validation.*

13.45-14.10: Vanessa Diaz: *Multi-physics & multi-scale modelling and simulation of mechanical heart valve-left ventricle coupling using advanced user methods with ANSYS/CFX*

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Registration

If you plan to attend the workshop, please submit the registration before May 7: forms.simula.no/cbc-summer-workshop

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- Practical information -

For information on how to get to Simula, reimbursement of expenses, hotel information and places to eat, please visit: Practical information for guests

What	
When	May 19, 2008 10:00 AM to May 21, 2008 04:00 PM
Where	Storstua
Contact Name	Kent-André Mardal
Add event to calendar	vCal iCal