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CBC Talk on Two-Phase Flow in the Earth's Mantle: From Subducting Slabs to Island Arcs - March 27, 2014

Dr. L. Alisic at Bullard Laboratories, University of Cambridge will visit CBC on the 26-27th of March, and hold a talk on the use of FEniCS for magma dynamics problems. The talk will be pitched to a general science audience.

Total number of participants: 14
 Total number of guests outside of CBC: 1
 Number of different nationalities represented: 7
 Total number of speakers: 1
 Total number of talks: 1

Abstract

The Earth's mantle consists of partially molten rock which flows with centimetres per year, driving plate motions on the Earth's surface. The partially molten rock is effectively a porous matrix that can convect as well as compact, with melt moving around in the pores. The melt is extracted from the mantle at mid-oceanic ridges where new plates are formed, and in volcanic island arcs near subduction zones where plates are recycled back into the mantle. The manner in which melt migration occurs is an enigma, particularly in subduction zones. Water captured in the plates is released during subduction, inducing melting in the vicinity. This melting has been hypothesised to be related to the placement of island arcs near the subduction zones.

In order to gain insight in the evolution of melt distribution on all scales, we must better understand the material properties of partially molten rock. To this end, we develop numerical models of partially molten rock under shear, and compare these to existing laboratory results. We solve the equations for two-phase advection and compaction using the FEniCS framework

What	
When	Mar 27, 2014 from 12:30 PM to 01:30 PM
Where	Storstua@Simula
Contact Name	Hans Petter Langtangen
Attendees	Laura Alisic Simon Funke Kent-Andre Mardal Johannes Ring Mikael Mortensen Andre Massing August Johansson Øyvind Evju Magne Nordaas Gabriel Balaban Benjamin Kehlet Hans Petter Langtangen Heidi Bernhoff Miroslav Kuchta
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