Submittee: Chen Greif
Date Submitted: 2016-10-25 11:59
Title: Partial Differential Equations with deal.ii
Event Type: Summer-School

Location:
The University of British Columbia

Dates:
8/29/2016 - 9/1/2016

Topic:
Finite elements for PDEs

Methodology:
Lectures, as well as a lot of lab time which was used to work on code.

Objectives Achieved:
The objective was to equip the participants with basic knowledge on how to use the numerical software package deal.II. I believe that this objective was fully achieved.

Scientific Highlights:
In this class, we introduced the finite element library deal.II in order to solve partial differential equations. The class covers basic topics from installing the library and adding support for auxiliary software, to setting up a mesh. It advances to defining various finite element spaces on a mesh and the implementation of bilinear forms. We cover the implementation of discontinuous Galerkin methods as well as multigrid solvers and preconditioners. The capabilities of deal.II for multithreading and message passing parallelization are introduced. The course discusses applications like potential problems, linear and nonlinear elasticity, incompressible flow, porous media flow, and Maxwell eigenvalue problems.

Organizers:
Greif, Chen, Computer Science, UBC

Speakers:
Professor Guido Kanschat, IWR, University of Heidelberg, Germany

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Links:
https://www.pims.math.ca/scientific-event/160829-scpded