





15th Front Range Applied Mathematics (FRAM) Student Conference

UNIVERSITY OF COLORADO - DENVER

SATURDAY, MARCH 2ND, 2019

SPONSORS: THE SIAM STUDENT CHAPTERS AT

University of Colorado: Boulder, Colorado Springs and Denver campuses Colorado State University, Colorado School of Mines, MSU Denver, Colorado College, U. Wyoming

The Front Range SIAM Student Chapters are sponsoring the 15th Annual Applied Mathematics Regional Student Conference. This event allows students from all universities along the Front Range to learn about new developments in Applied Mathematics and promotes interest in the field. The conference is open to <u>both</u> undergraduate and graduate students.

Registration Information

The registration fee is \$10 for students and \$20 for everyone else, to help defray the cost of the breakfast and lunch that will be provided at the conference. Cash or checks are welcomed. Checks should be written to "CU Denver SGA". Inquiries about registration should be directed to Dr. Varis Carey, Faculty Advisor, (variscarey@googlemail.com), or Jordan Hall, President of the CU Denver SIAM Student Chapter (JORDAN.R.HALL@ucdenver.edu).

Registration and Breakfast will open at 8:30am with talks beginning at 9am. The conference will take place on the 4th floor of the Student Commons Building (1201 Larimer Street) on the Auraria campus, in downtown Denver.

Call for Presentations

There will be 20-minute student presentations. A special MCM/ICM session will also be organized. Please send abstracts in LaTeX (.tex) or plain text (.txt) format to FRAMSC.abstracts@gmail.com. For more info, please check the conference website or contact the organizers.

Abstract submission deadline is Friday, Feb 22, 2019!

Contact Information

University of Colorado Boulder: Dr. Anne Dougherty, anne.dougherty@colorado.edu Dr. Stephen Becker, stephen.becker@colorado.edu

University of Colorado Colorado Springs: Dr. Radu Cascaval, radu@uccs.edu Plenary Speaker

Dr. Jan S. Hesthaven EPFL Switzerland



How to predict a Tsunami

Abstract: During the last decades, earthquake driven tsunamis have impacted the lives of millions and resulted in financial losses in the billions. Some of this devastation could be avoided if one could reliably predict the impact of tsunamis as an integral part of tsunami warning system, giving time to evacuate people and high value asserts as needed. In this talk we discuss the models and computational elements of a simulation tool to enable the prediction of tsunami arrival time on a global scale. The flexibility of the formulation allows for the use of a fully non-conforming discretization, opening the path to efficient adaptive computations. We illustrate the properties of the scheme through a series of simple one-dimensional tests before validating the method for the simulation of large-scale tsunami events on the rotating sphere by performing numerical simulations of several historical large scale events and compare our results to real-world data. By considering both static and dynamic earthquake models, we demonstrate that the method is able to predict arrival times and wave amplitudes accurately, even over long distances.

University of Colorado Denver: Dr. Varis Carey, variscarey@googlemail.com

Colorado State University: Dr. James Liu, liu@math.colostate.edu

Colorado School of Mines: Dr. Mike Nicholas, nicholas@mines.edu

Metropolitan State University of Denver:

Dr. Henc Bouwmeester, hbouwmee@msudenver.edu Dr. Brendan Fry, bfry2@msudenver.edu

Colorado College: Dr. Beth Malmskog, bmalmskog@ColoradoCollege.edu

> University of Wyoming: Dr. Lynne K. Ipina, ipina@uwyo.edu

About the Speaker: Prof. Hesthaven currently holds the Chair of Computational Mathematics and Simulation Science within the Mathematics Institute of Computational Science and Engineering (MATHICSE) at École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland. He was the Founding Director of the Center for Computation and Visualization (CCV) and Deputy Director of the Institute of Computational and Experimental Research in Mathematics (ICERM), at Brown University, the newest NSF Mathematical Sciences Research Institute. In March 2014 he was elected SIAM Fellow for contributions to high-order methods for partial differential equations. For more info, please visit: https://mcss.epfl.ch.

Conference Website: https://www.colorado.edu/amath/2019-siam-front-range-student-conference













