



# 16<sup>th</sup> Front Range Applied Mathematics (FRAM) Student Conference

UNIVERSITY OF COLORADO - DENVER

SATURDAY, MARCH 7<sup>TH</sup>, 2020

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 16<sup>th</sup> 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 both 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 food (breakfast and lunch) to 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).

Registration and Breakfast will open at 8:30am with talks beginning at 9am. The conference will take place on the 4<sup>th</sup> 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](mailto:FRAMSC.abstracts@gmail.com). For more info, please check the conference website or contact the organizers.

**Abstract submission deadline is Friday, Feb 28, 2020!**

## Contact Information

**University of Colorado Boulder:**  
Dr. Anne Dougherty, [anne.dougherty@colorado.edu](mailto:anne.dougherty@colorado.edu)  
Dr. Stephen Becker, [stephen.becker@colorado.edu](mailto:stephen.becker@colorado.edu)

**University of Colorado Colorado Springs:**  
Dr. Radu Cascaval, [radu@uccs.edu](mailto:radu@uccs.edu)

**University of Colorado Denver:**  
Dr. Varis Carey, [variscarey@googlemail.com](mailto:variscarey@googlemail.com)

**Colorado State University:**  
Dr. James Liu, [liu@math.colostate.edu](mailto:liu@math.colostate.edu)

**Colorado School of Mines:**  
Dr. Mike Nicholas, [nicholas@mines.edu](mailto:nicholas@mines.edu)

**Metropolitan State University of Denver:**  
Dr. Henc Bouwmeester, [hbouwmee@msudenver.edu](mailto:hbouwmee@msudenver.edu)  
Dr. Brendan Fry, [bfry2@msudenver.edu](mailto:bfry2@msudenver.edu)

**Colorado College:**  
Dr. Beth Malmskog, [bmalmskog@ColoradoCollege.edu](mailto:bmalmskog@ColoradoCollege.edu)

**University of Wyoming:**  
Dr. Lynne K. Ipina, [ipina@uwoyo.edu](mailto:ipina@uwoyo.edu)

## Plenary Speaker

**Dr. Jeanne Clelland**  
CU Boulder Math



**Gerrymandering: What is it, how can we measure it, and what can we do about it?**

**Abstract:** Gerrymandering refers to the practice of drawing legislative districts so that one political party wins a disproportionate number of seats relative to their share of the electorate. But how can we tell whether or not districts have been drawn fairly? This is a legal question and, increasingly, a mathematical one, but the mathematical tools used to measure gerrymandering are relatively new and are still evolving rapidly.

One promising approach involves using computational and statistical tools to compare a specific districting plan to an "ensemble" consisting of a large number of potential districting plans. This approach, referred to as "outlier analysis," has the advantage of taking into account the inherent political geography of a region in a way that simpler measures cannot, and it has already begun to play a role in major court cases regarding redistricting in North Carolina, Pennsylvania, and elsewhere. In this talk I will describe how gerrymandering works and some of the mathematical tools that are being developed to detect it, with a focus on outlier analysis. I will also talk about an ongoing effort to collect data and perform this type of analysis for as many states as possible in advance of the next round of Congressional redistricting in 2021.

**About the speaker:** Jeanne Clelland is a Professor in the Department of Mathematics at CU Boulder. She received her Ph.D. in 1996 from Duke University and works in differential geometry and the application of geometry to the study of partial differential equations. Professor Clelland is the author of the textbook, from Frenet to Cartan: The Method of Moving Frames. She is the 2018 winner of the Burton W. Jones Distinguished Teaching Award, from the Rocky Mountain Section of the Mathematical Association of America. Professor Clelland is also interested in applying geometry and mathematical techniques to questions of gerrymandering.

**Conference Website:** <https://www.colorado.edu/amath/organizations/siam-undergraduate-chapter/2020-siam-front-range-student-conference>

