

Summer School on Numerical Methods for PDEs

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Numerical methods for PDEs

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A summer school

Welcome!

Land acknowledgment

Colorado State University acknowledges, with respect, that the land we are on today is the traditional and ancestral homelands of the Arapaho, Cheyenne, and Ute Nations and peoples. This was also a site of trade, gathering, and healing for numerous other Native tribes. We recognize the Indigenous peoples as original stewards of this land and all the relatives within it. As these words of acknowledgment are spoken and heard, the ties Nations have to their traditional homelands are renewed and reaffirmed.

CSU is founded as a land grant institution, and we accept that our mission must encompass access to education and inclusion. And, significantly, that our founding came at a dire cost to Native Nations and peoples whose land this university was built upon. This acknowledgment is the education and inclusion we must practice in recognizing our institutional history, responsibility, and commitment.

Purpose

- **Computational Science is not a diverse field:**
 - In my department: 4 males (2 white, 2 Asian)
 - In my previous department: 8 white males
 - Among the deal.II leadership: 11 white males
 - Similar proportions in other departments and projects
- This is not representative of the undergraduate and graduate population

Purpose

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- This is not representative of the undergraduate and graduate population
- **Problem 1:** We are clearly missing out on a lot of talent.
- **Problem 2:** We are clearly not doing right on a lot of our students.

Purpose

We want to make a small step towards fixing this:

- Teach material
- Build community
- Teach strategies for successful careers
- Mentor

Purpose

How do we hope to run this workshop:

Alternate time slots where we talk about

- Numerical methods for PDEs
- Practical exercises using the deal.II library
- Talk about “soft topics”:
 - Careers
 - Mentoring
 - Traveling
 - Service/organization/volunteering
 - Presenting yourself and your work

Alternate between plenary and small group sessions.

Speaker introductions

Wolfgang Bangerth

Speaker introductions

Juliane Dannberg

Speaker introductions

Timo Heister

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Natasha Sharma

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Annalisa Quaini

Code of Conduct

Colorado State University is committed to providing an environment that respects the dignity and worth of every member of its community.

[...]

Colorado State University is committed to providing an environment that is free from discrimination and harassment based on race, age, creed, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy.

[...]

If you have concerns, talk to us!

See <https://oeo.colostate.edu/discrimination-harassment-sexual-harassment-sexual-misconduct-domestic-violence-dating-violence-stalking-and-retaliation-policy/>

Kick-off survey

We want to learn a bit about you:

- Who are you?
- Why are you here?
- What do you hope to get out of this summer school?

We will be asking you a few more questions at the end on Monday.

Lunch plans

We will go to Ram's Horn Dining Hall:



Each group has a mentor. Your mentor's job is primarily to *listen and mentor* – help each other!

Dinner

On your own – explore downtown 1 mile north of here.

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1-slide introductions

We have put everyone into one of four groups.

Give us a 60-second introduction into who you are and what you do!

1-slide introductions

Group 1 (Mentor: Wolfgang)

- Aggarwal Ashna
- Bezbaruah Manaswinee
- Hayes Nicole
- Lee SoRa
- Morales Miranda Adriana
- Novak Emily
- Porter Geneva
- Romero Irabiel

1-slide introductions

Group 2 (Mentor: Juliane)

- Cosburn Katherine
- Emishaw Luelseged
- Fildes Rebecca
- Gerault Melanie
- Kajan - Thomas Marie
- Lata Charu
- Omosebi Omotayo
- Sparks Stephanie

1-slide introductions

Group 3 (Mentor: Natasha)

- Galindo Andres
- Hu Jiuhua
- Jayadharan Manu
- KoueviAssionvi
- Leathers Brittany
- Pereira Rebecca
- Wang Zhuoran

1-slide introductions

Group 4 (Mentor: Timo)

- Bergstrom Kirana
- Gleeson Brandon
- Imbert-Gerard Lise-Marie
- Markowski Mae
- Sánchez-Vizuet Tonatiuh
- Tro Sara
- Zepeda Aguilar Mario
- Zhang Wenjuan

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Careers

Where can you go with a degree in Computational Science and Engineering (or Computational Math, or Computational X)?

- Academia
- National Labs
- Industry

Careers

Academia:

- Mathematics
- Most departments now have Computational X specialists
- Few positions – far fewer than graduates

Careers

National Labs:

- There are 17 national labs
- Sandia, Los Alamos may be best known
- Some do nuclear weapons work – all also do civilian work
- Tens of thousands of employees around the country
- Very large employer of people with computational skills
- Work is a mix of research, development, and application to concrete problems

Careers

Industry:

- Largest employer of people with computational skills
- *Every* object today is designed with some kind of computational approach:
 - planes
 - cars
 - tires
 - diapers
 - ...
- Graduates principally need to have
 - practical computer skills
 - some application knowledge
- Some jobs also have a research component