Firedrake

RSECon 2023 Firedrake workshop

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Workshop plan

1. Brief introduction to Firedrake (10 mins)
2. Hands-on with Jupyter notebooks (80 mins)
3. Free coding time/Q&As (90 mins)

What is Firedrake?

- Framework for solving partial differential equations (PDEs) using the finite element method (FEM)
- Almost entirely written in Python
- Makes heavy use of code generation to provide flexibility and performance

Why should I, an RSE, care about Firedrake?

- FEM is extremely widely used by researchers
- FEM codes are challenging to write from scratch
- A mathematician/domain specialist can write a Firedrake application to solve their equation in fewer than 100 lines of Python code
- This script can then, without modification, be run on massive supercomputer

How does Firedrake work?

Next steps

1. Install Jupyter, etc
2. Download the first Jupyter notebook from
   `https://www.firedrakeproject.org/notebooks.html`.