Flattening the Energy Innovation Landscape?

Prof. Rachel Slaybaugh

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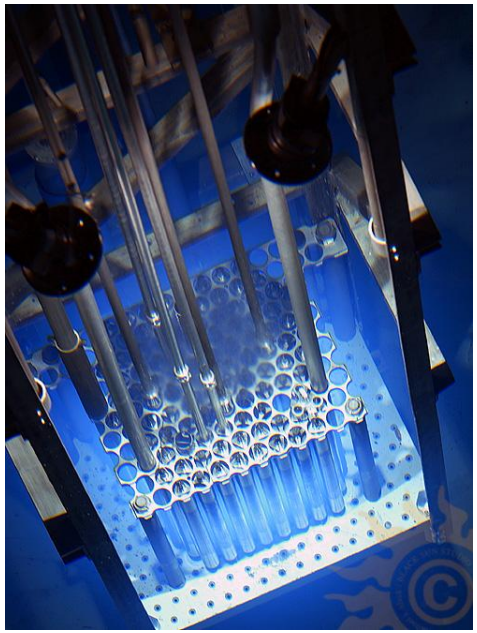
Nuclear Innovation Bootcamp
UC Berkeley

Berkeley
UNIVERSITY OF CALIFORNIA

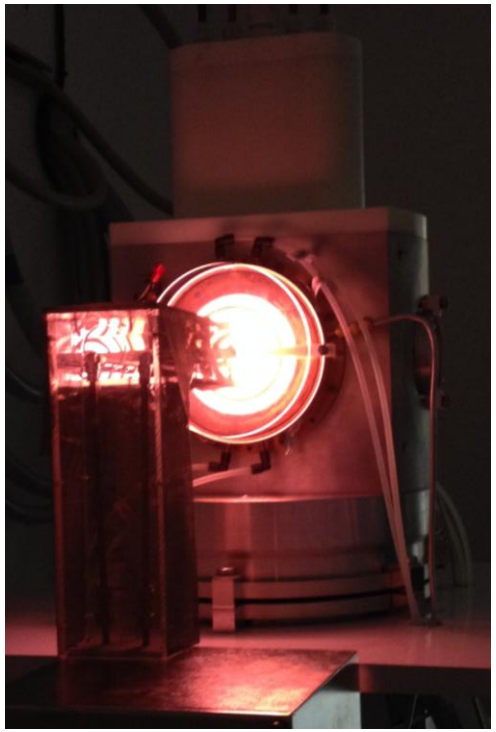
A little bit about me

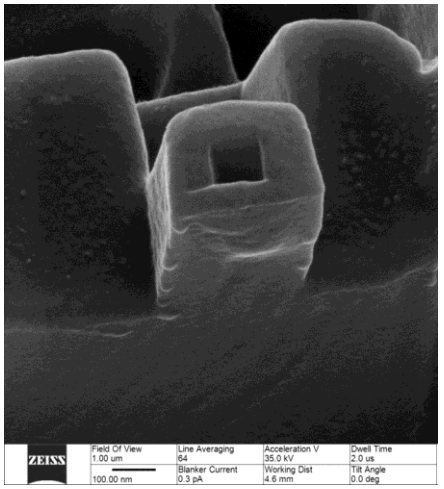
- My path has been all nuclear all the way
  - BS in NE from Penn State, where I was also a research reactor operator
  - MS/PhD from UW-Madison
  - 2 years at Bettis Atomic Power Laboratory
  - Highly involved in the American Nuclear Society
- Now I'm a nuclear engineering professor at Berkeley



A little bit about my department

- Our department focuses on advanced nuclear reactor design, nuclear security, and applied physics

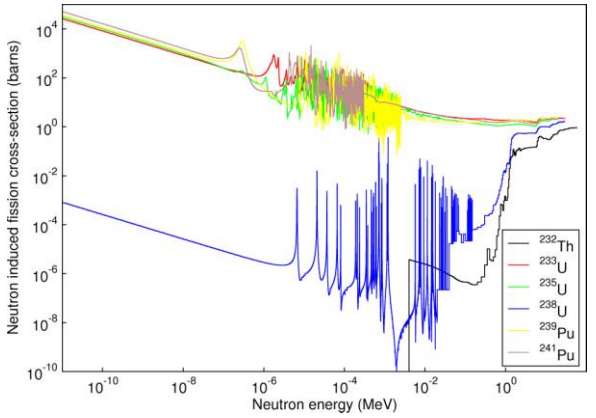




A little bit about my work

- Inside of that, I develop numerical methods for neutral particle transport (tools for design and analysis)
- Applied math, informed by physics, and driven by architecture

$$[\hat{\Omega}\cdot\nabla+\Sigma(\vec{r},E)]\psi(\vec{r},\hat{\Omega},E)=$$
$$\int dE'\int d\hat{\Omega}'\,\Sigma_s(\vec{r},E'\rightarrow E,\hat{\Omega}'\cdot\hat{\Omega})\psi(\vec{r},\hat{\Omega}',E')$$
$$+\frac{\chi(E)}{k}\int dE'\,\nu\Sigma_f(\vec{r},E')\int d\hat{\Omega}'\,\psi(\vec{r},\hat{\Omega}',E')$$



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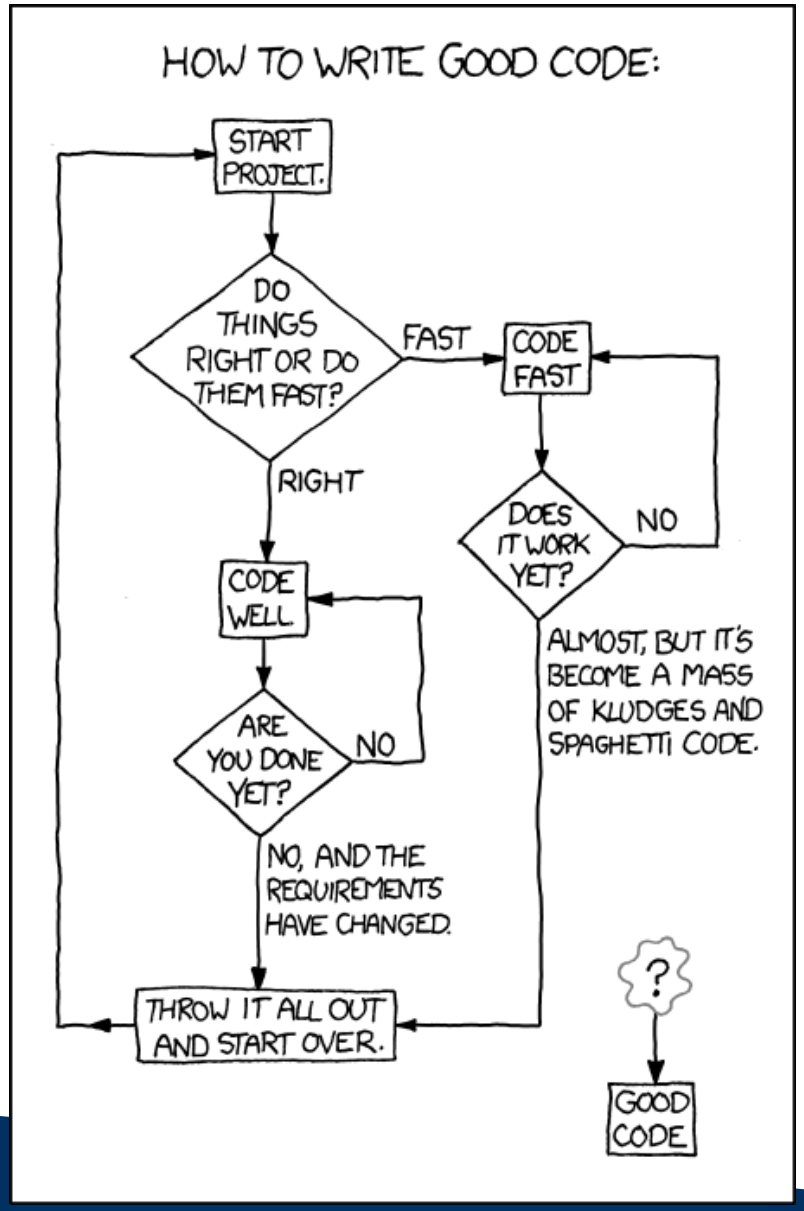

Quality Software Required

THW

software carpentry

PyNE

BERKELEY Institute for Data Science

We need all the brains

- To have enough clean energy soon enough, we need it be easier for more people to work on clean energy

- I'd like to see open sourcing of
  - Challenges (e.g. components, system designs, etc.)
  - Required software
  - Access to resources to do design and computation

- Think open software and open hardware combined

Environment, Health, Prosperity

How do we help the world develop **sustainably**?

http://www.insidesources.com/wp-content/uploads/2015/11/bigstock-Energy-4298515-300x300.jpg