OAK RIDGE National Laboratory

Polaris Tutorial

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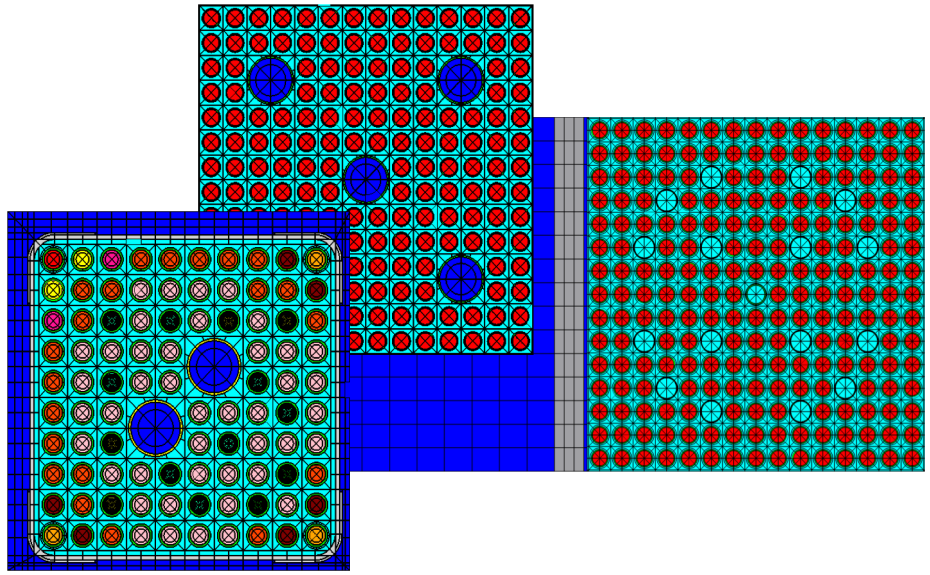
Polaris Overview

- Fast 2-D lattice physics
- Simple Input
  - Assembly geometry
  - Material definitions
  - Range of system conditions
- Output
  - Assembly-averaged few-group cross sections
    - Used as input for nodal core simulator such as PARCS
  - Depletion material isotopics
    - Used for spent fuel characterization
- Modeling Requirements
  - Accurate prediction of lattice k-eff, pin power distribution, few-group cross-sections, depletion isotopics
  - Relatively fast: 10,000s of transport calculations per core analysis



Wide range of LWR geometry support

Tutorial

- Let's build a model, you decide:
- WEC 17x17
  - VERA Benchmark:
  - https://www.casl.gov/sites/default/files/docs/CASL-U-2012-0131-004.pdf
- GE 7x7
  - OECD UAM Benchmark
  - https://www.oecd-nea.org/science/docs/2013/nsc-doc2013-7.pdf
- Note Polaris Overview material at : scale.ornl.gov