LA-UR-24-23446

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Author(s):	Hoffman, Keenan Jeffrey
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Modeling Approaches for Depletion of a TRISO-Fueled Microreactor

Keenan Hoffman

Alexis Maldonado

Todd Palmer

08/19/2024

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Introduction/Motivation

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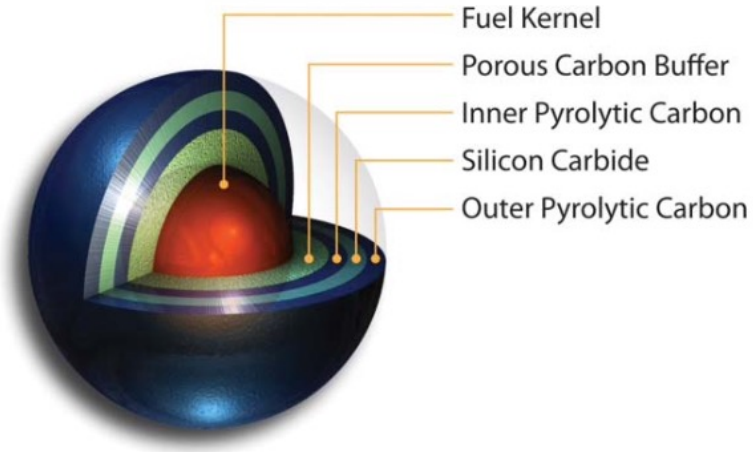

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  - **Spatial Depletion Resolution**
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    - Homogenization technique
  - **Woodcock Delta Tracking**
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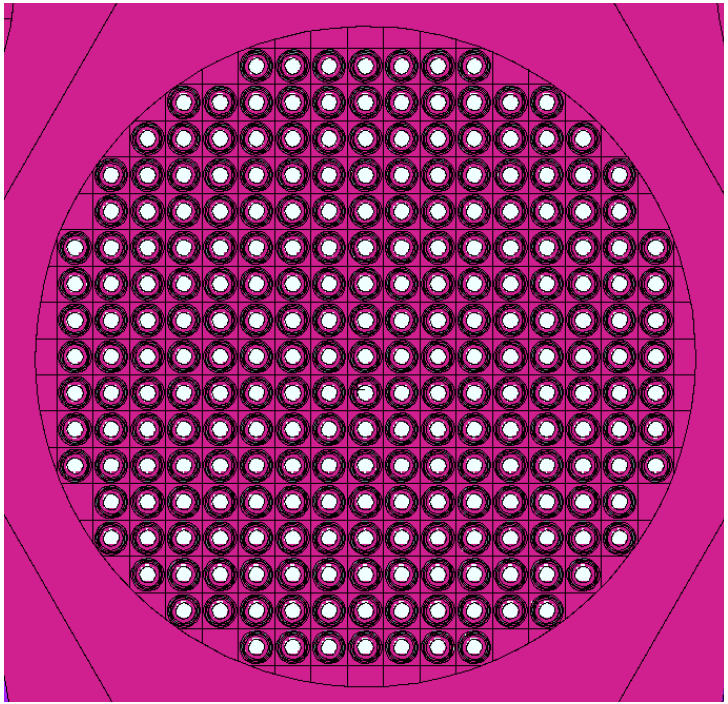
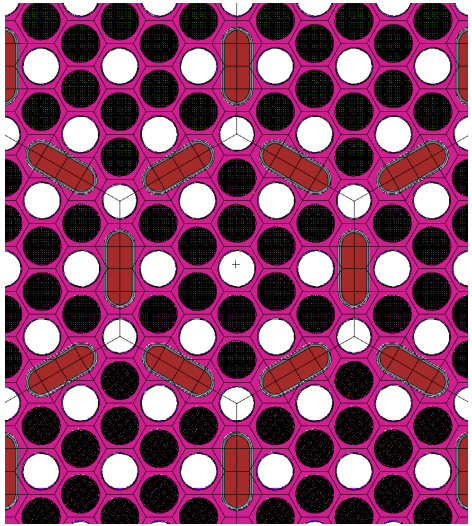


Snowflake Microreactor



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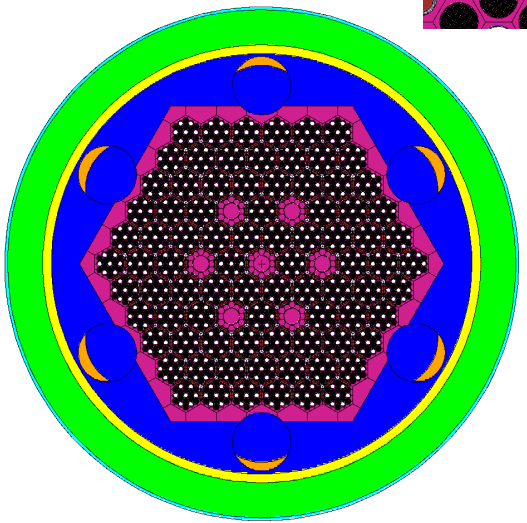

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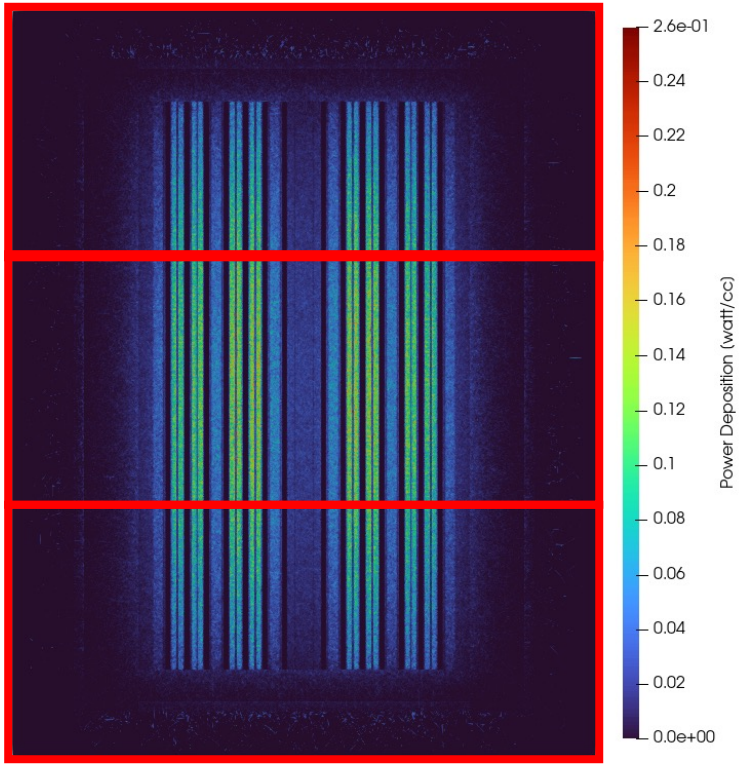

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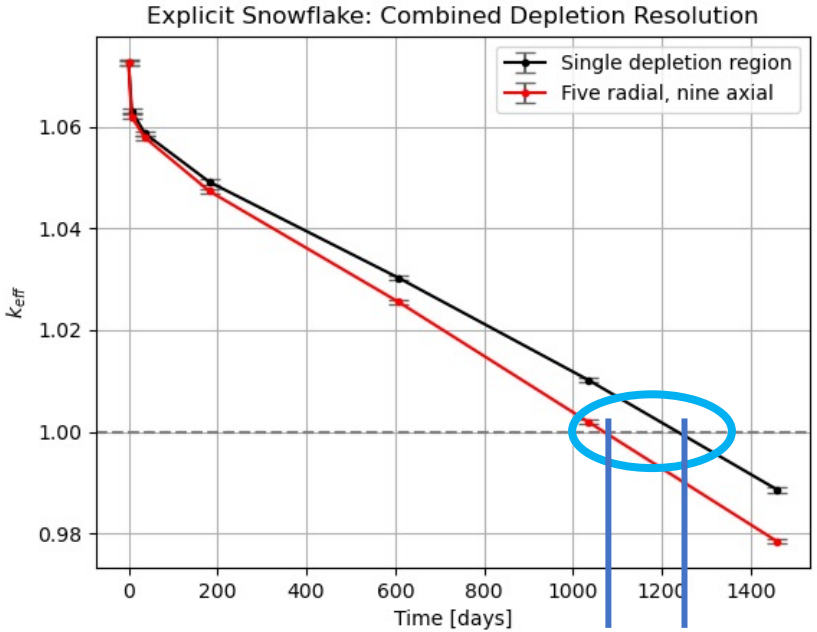

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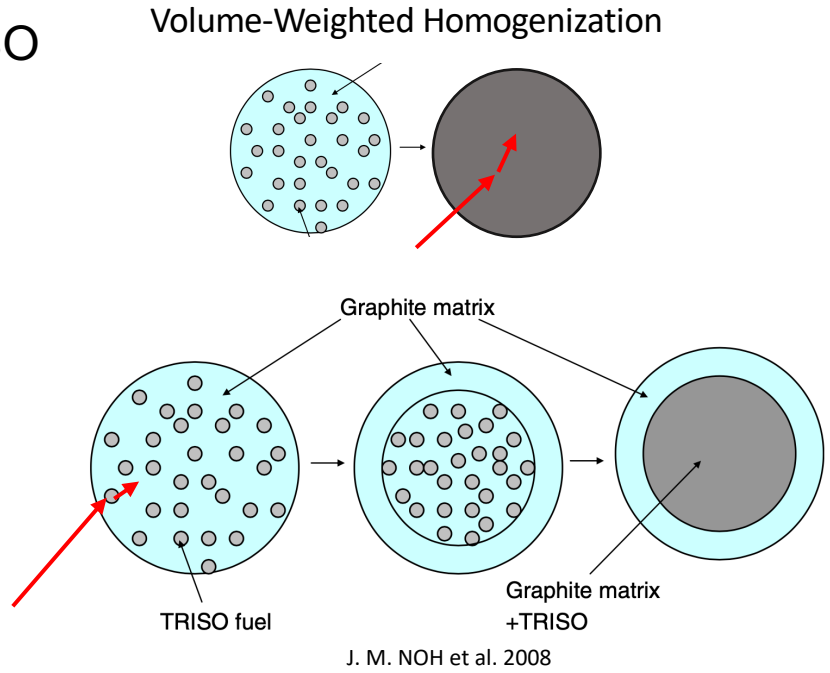

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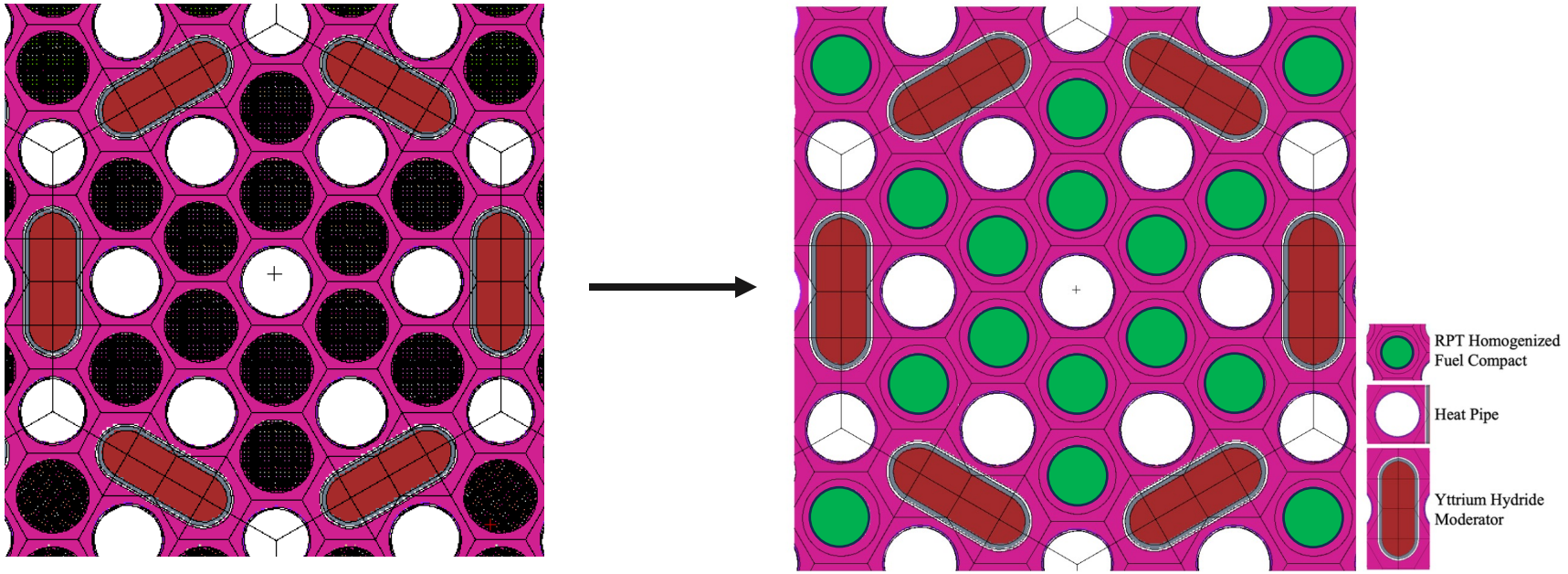

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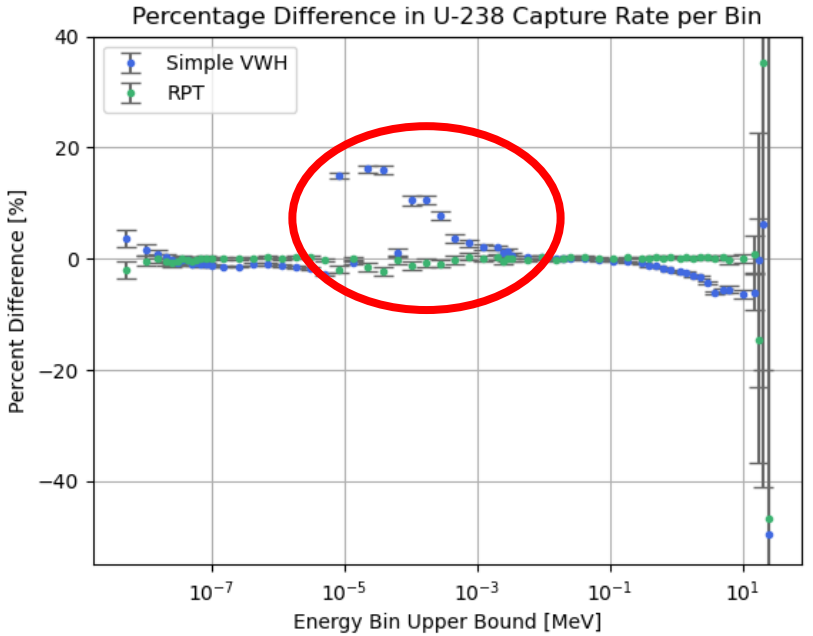

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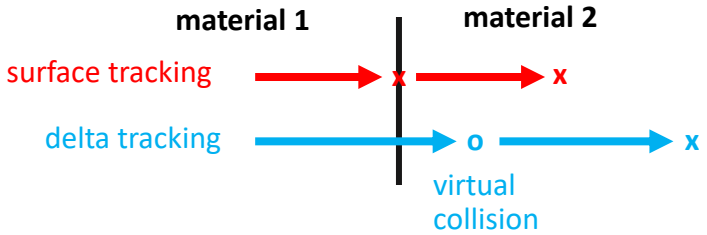

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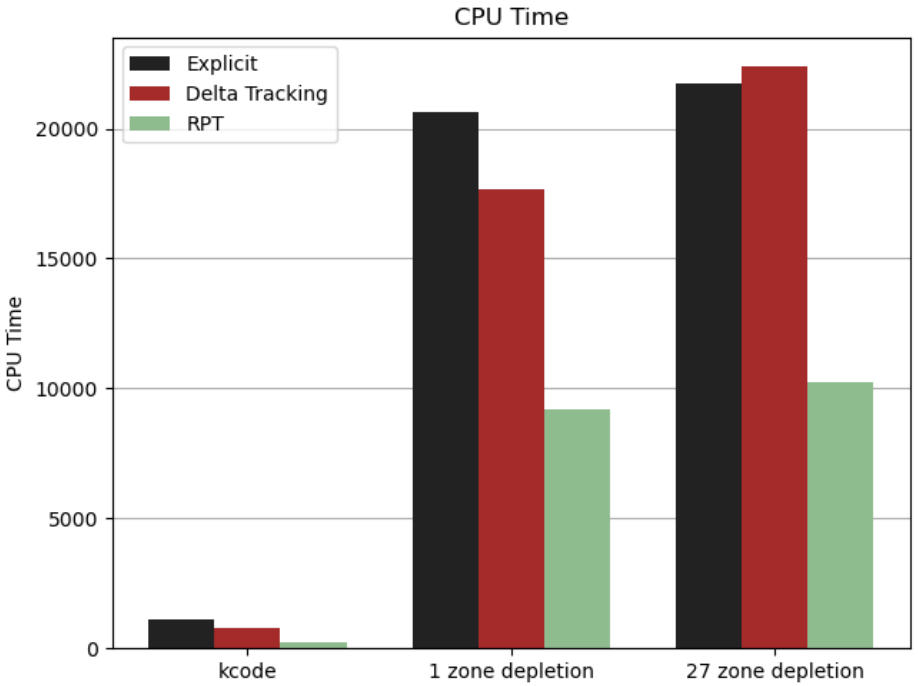

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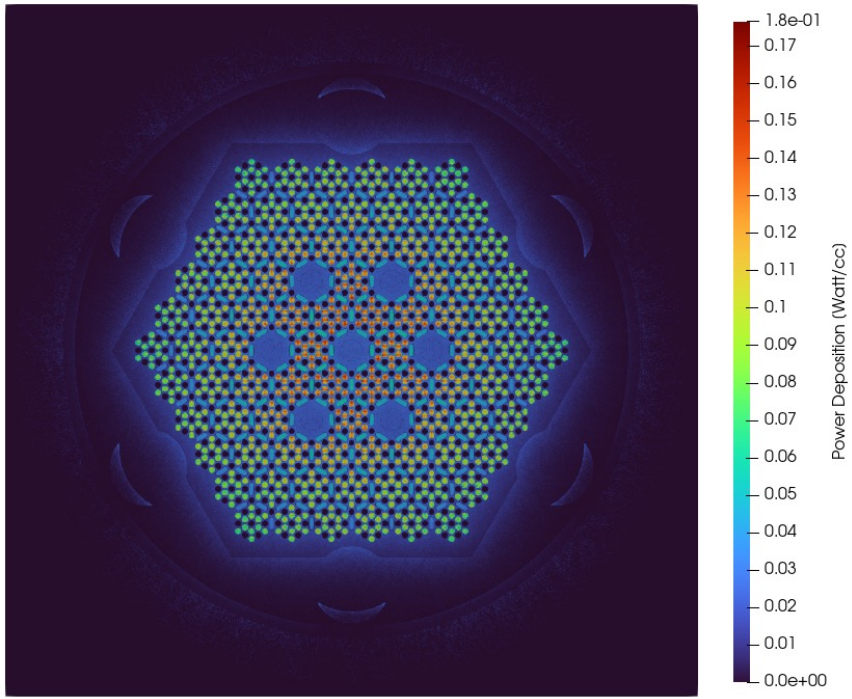

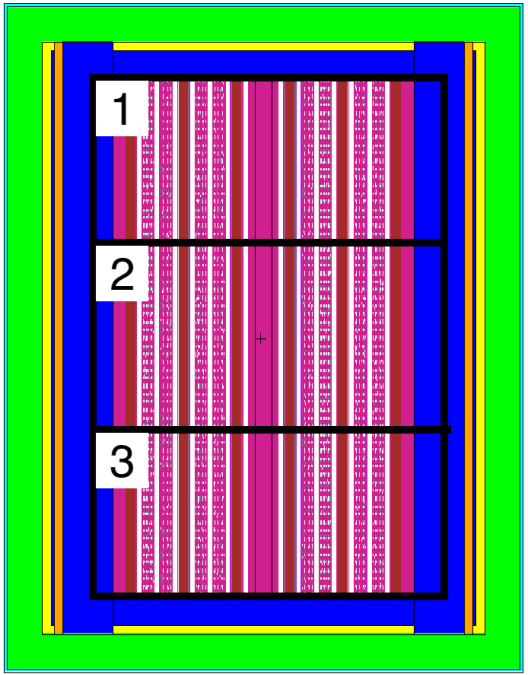

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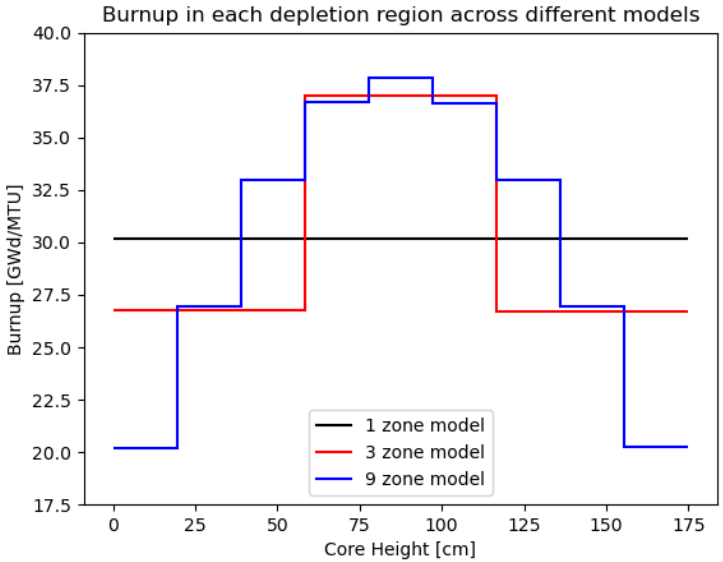
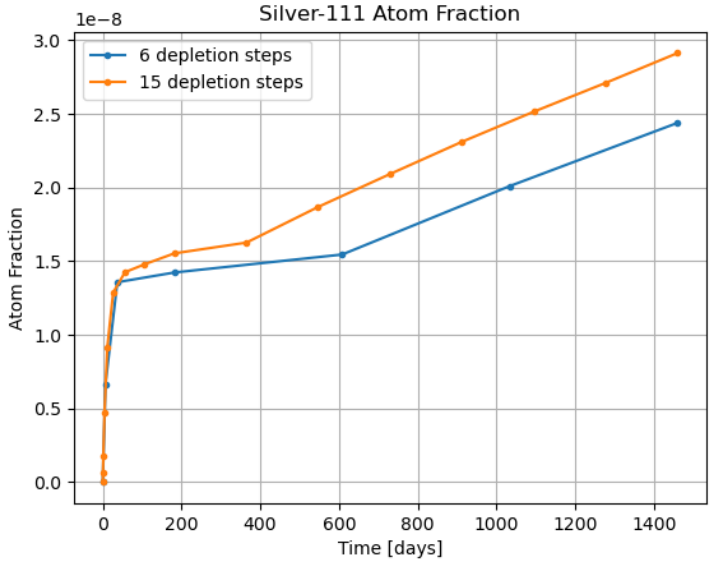
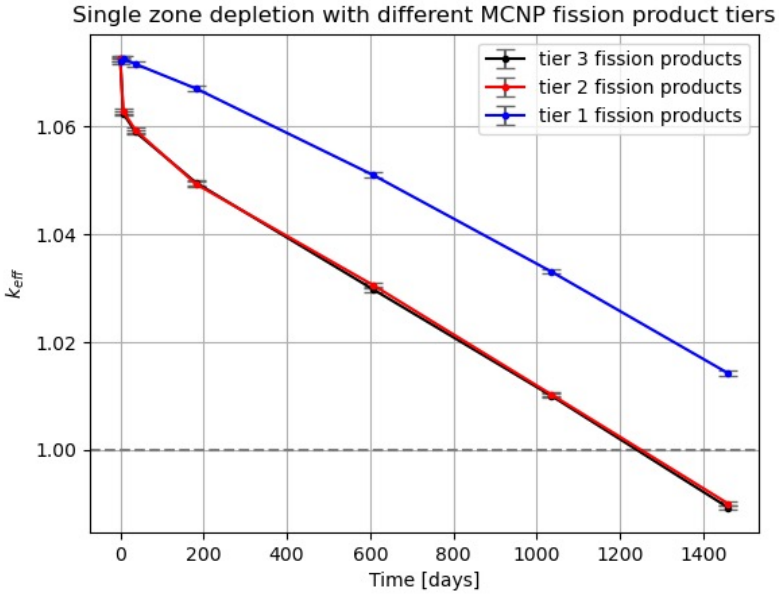




Extra Slide: Tracked Isotopes

- Tier 1 FP: 49 isotopes
- Tier 2 FP: 117 isotopes
- Tier 3 FP: 250 isotopes

- Observations:
  - Tier 2 CPU time +31%
  - Tier 3 CPU time +45%
  - Significant ^{155}Gd difference between FP tiers 2 and 3



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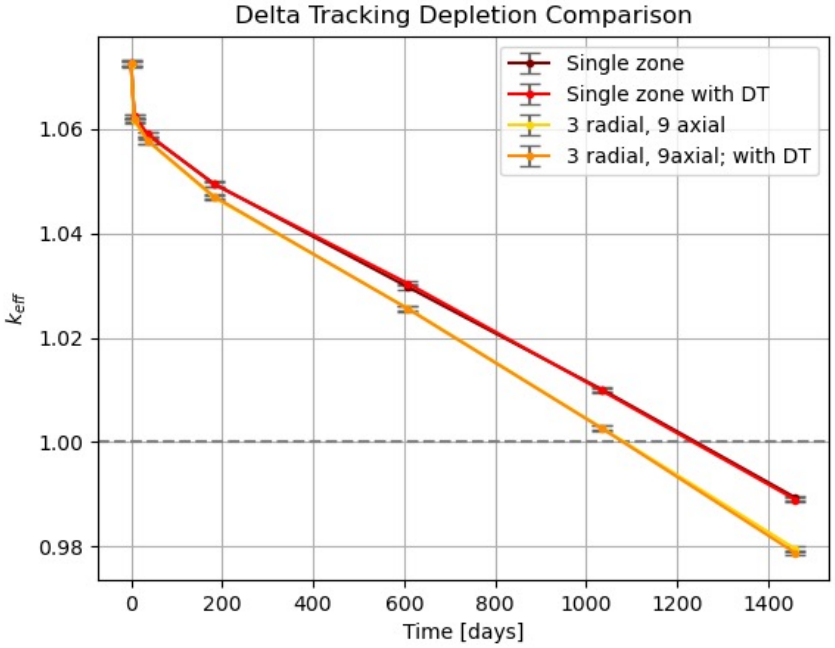

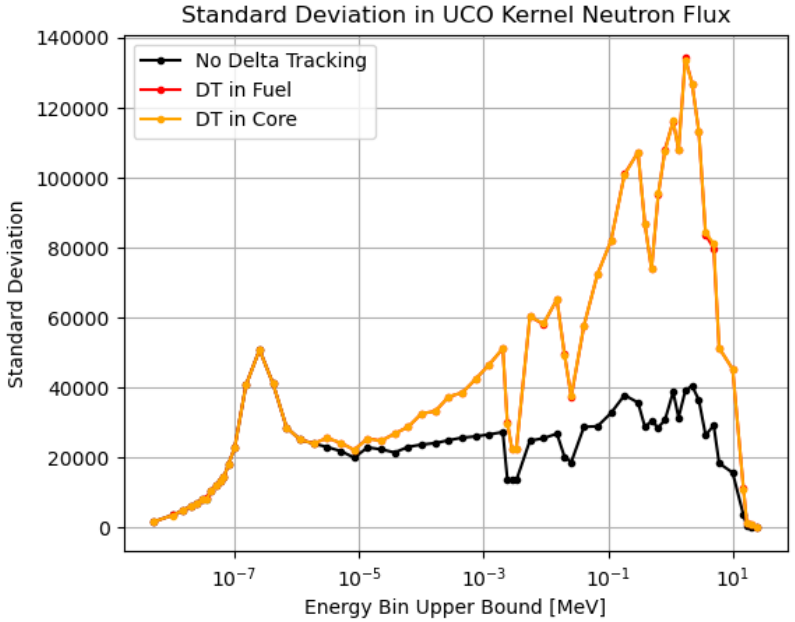

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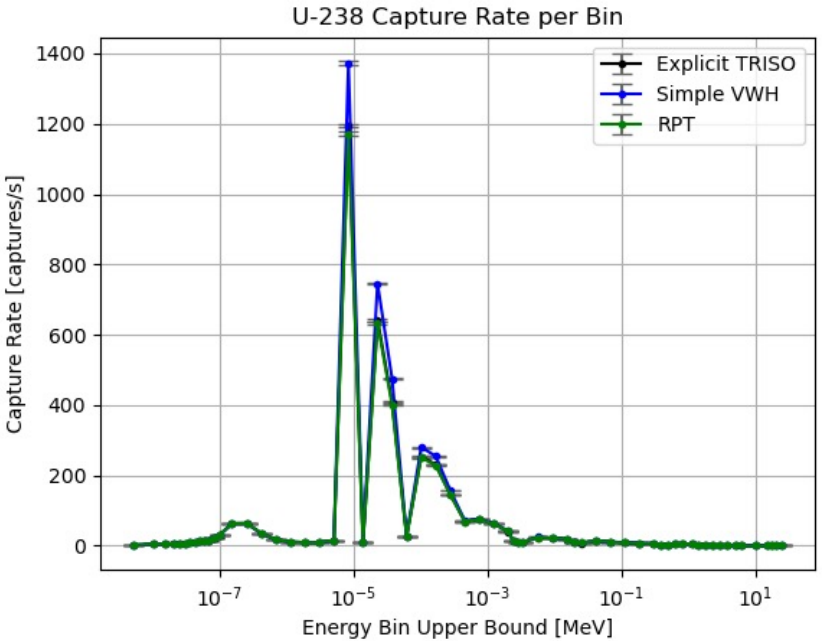

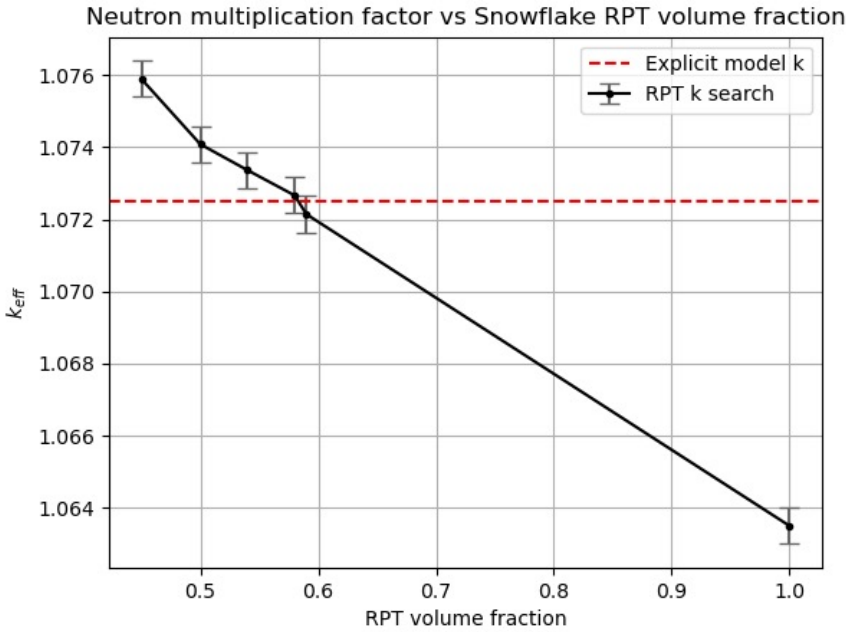

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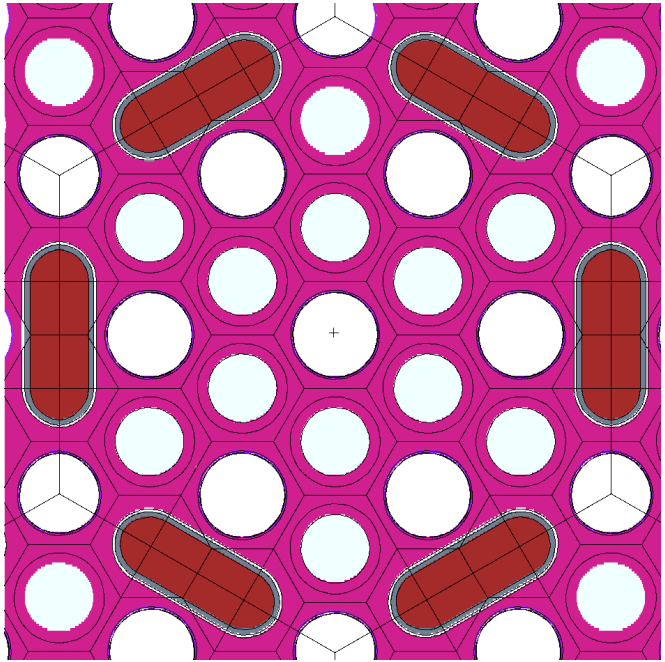

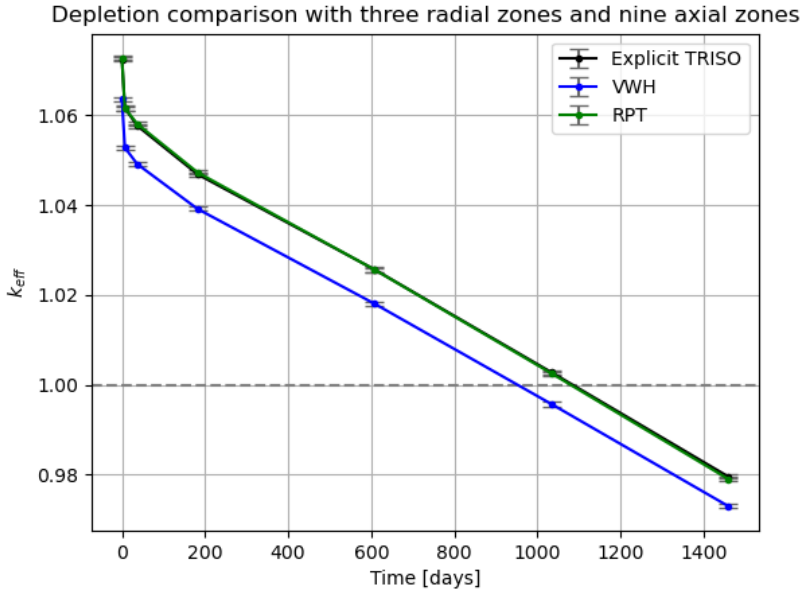

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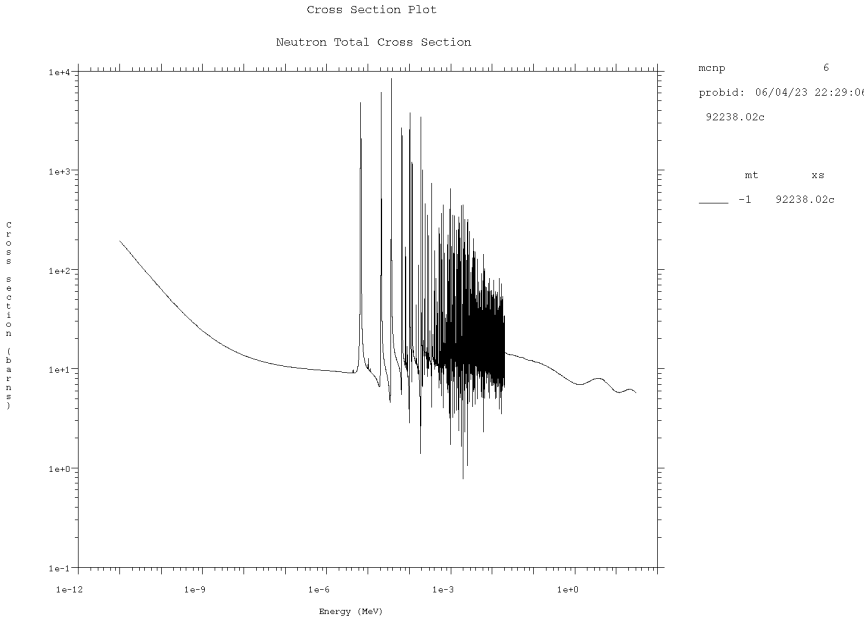

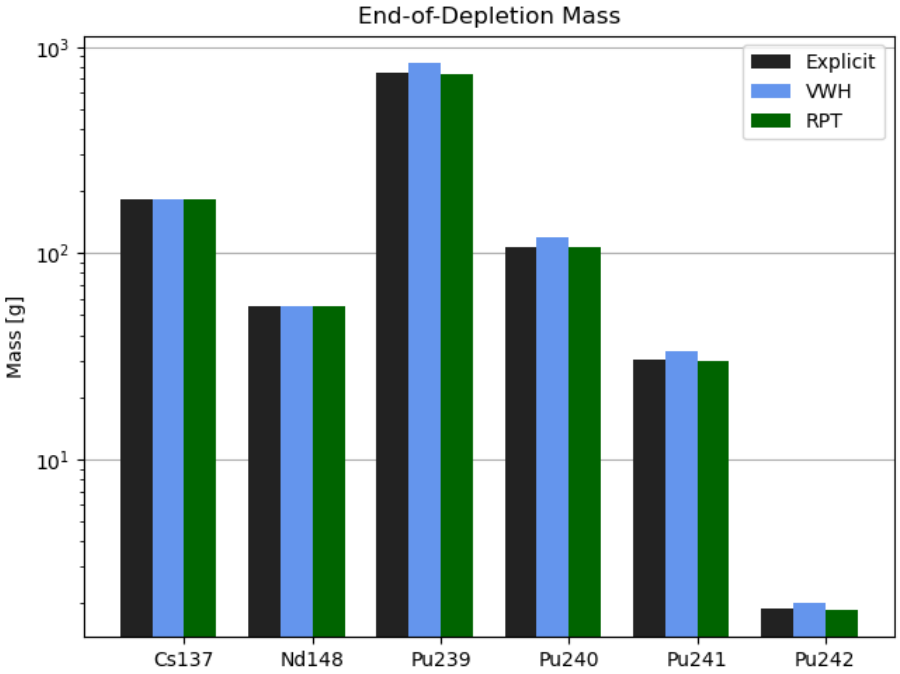

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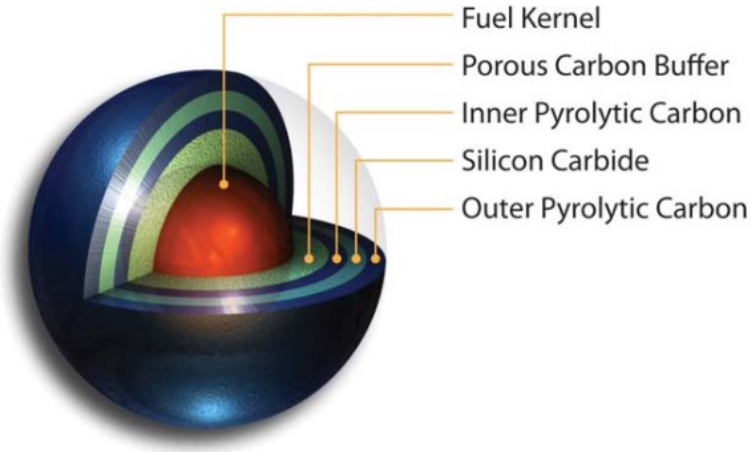

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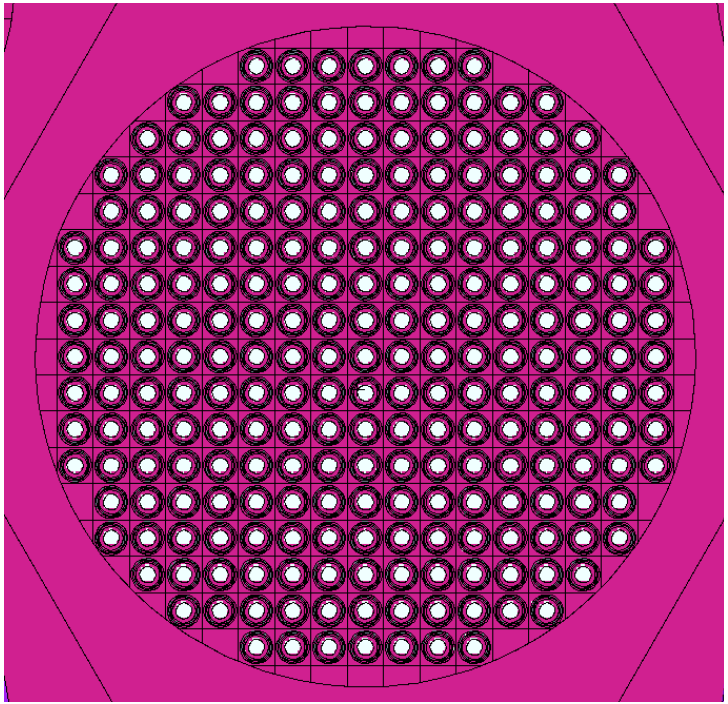

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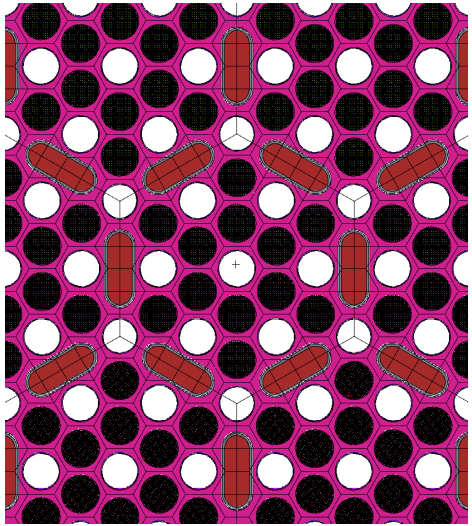

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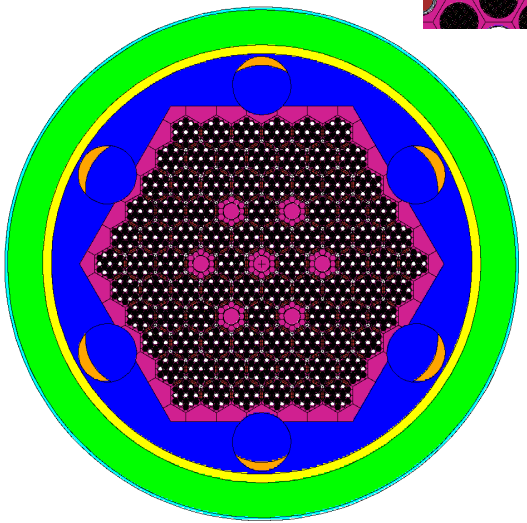

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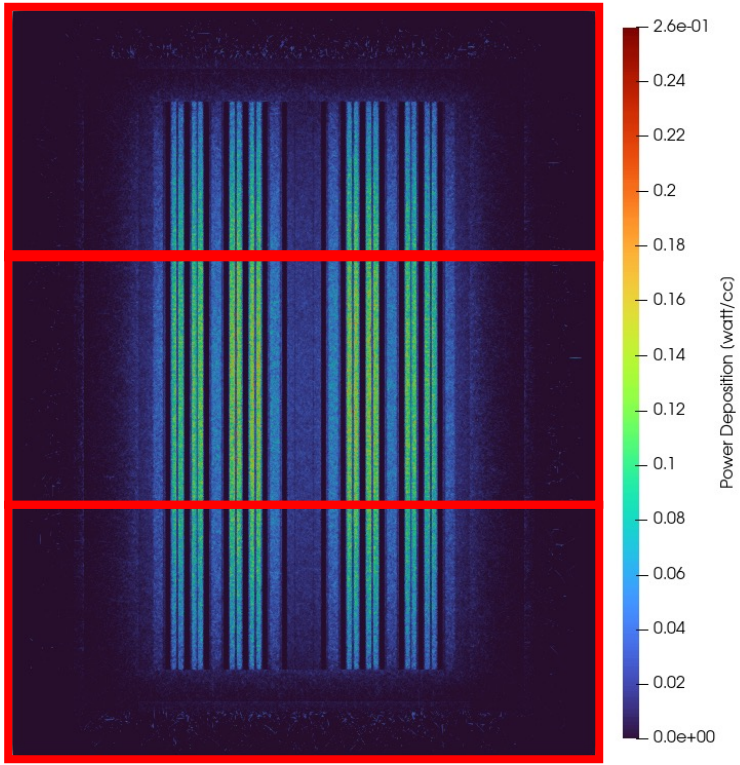

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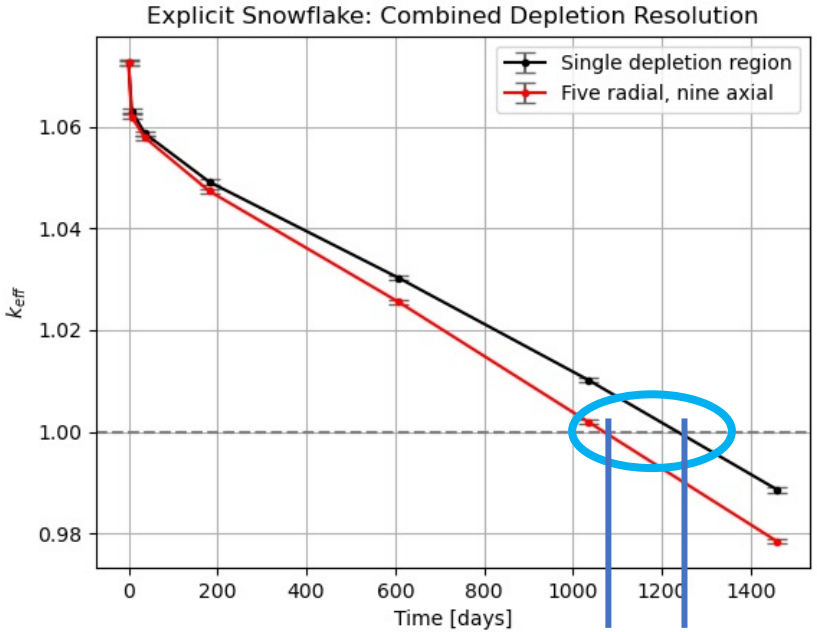

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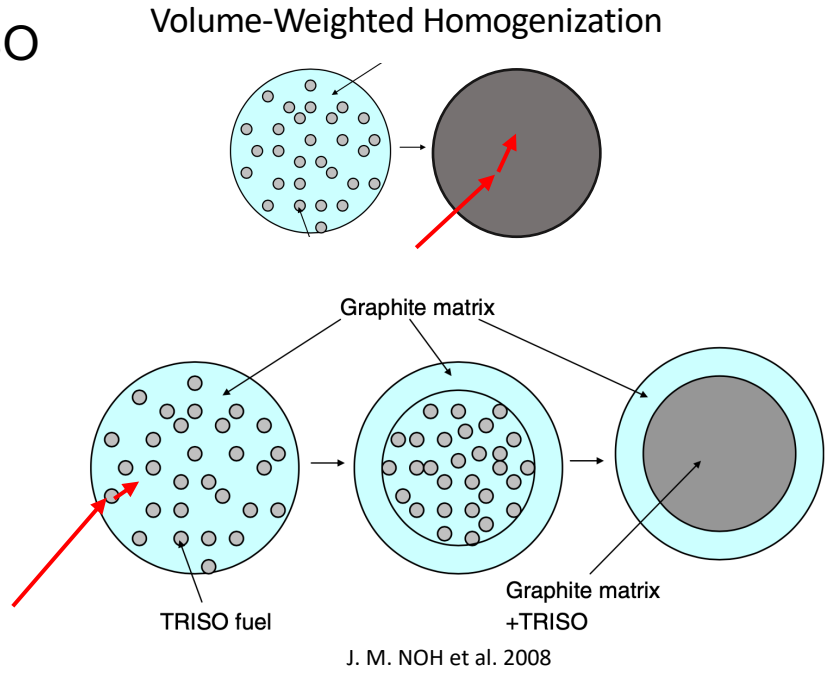

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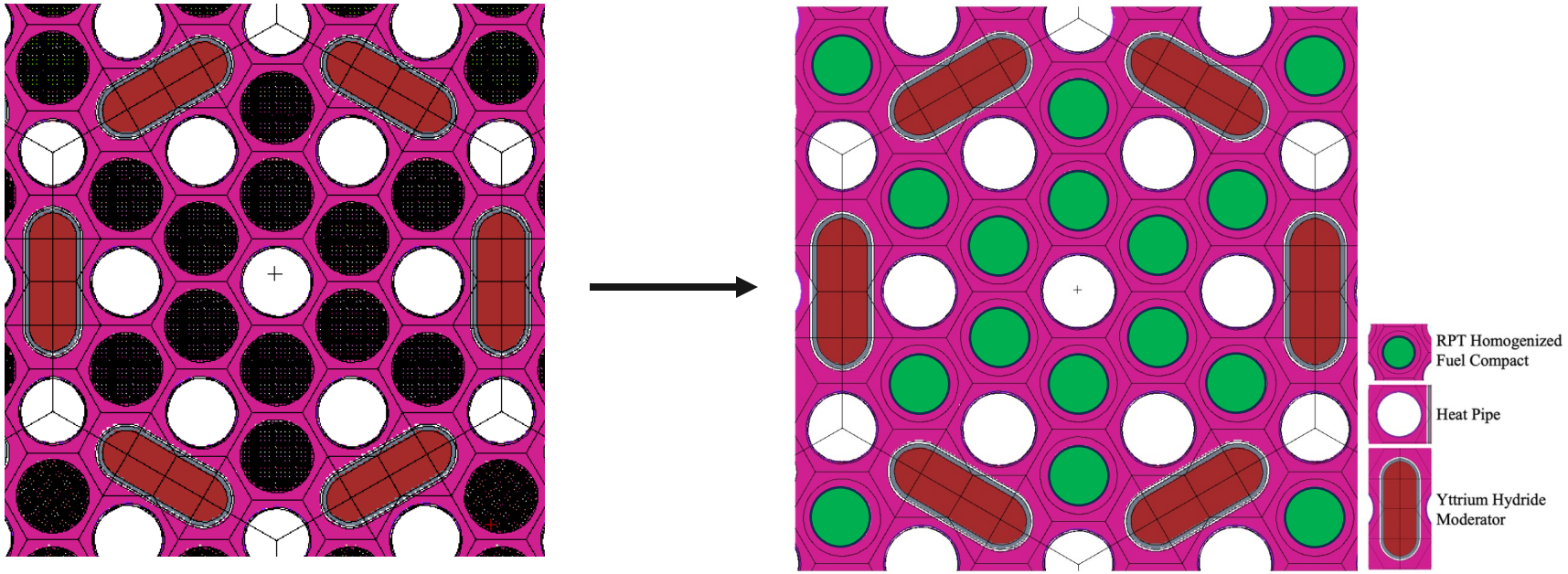

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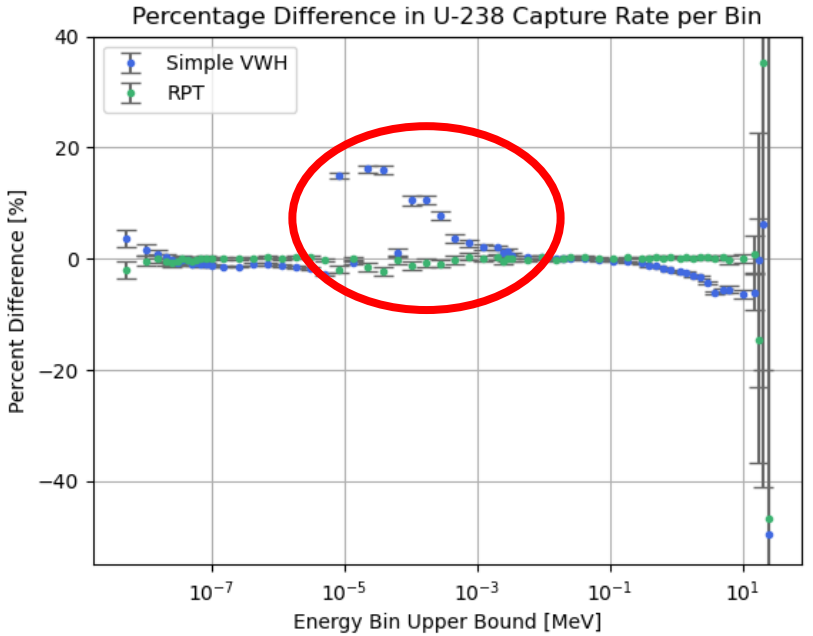

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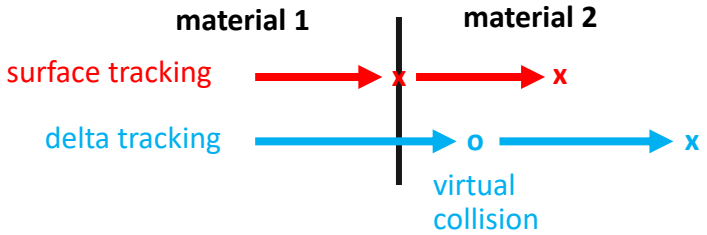

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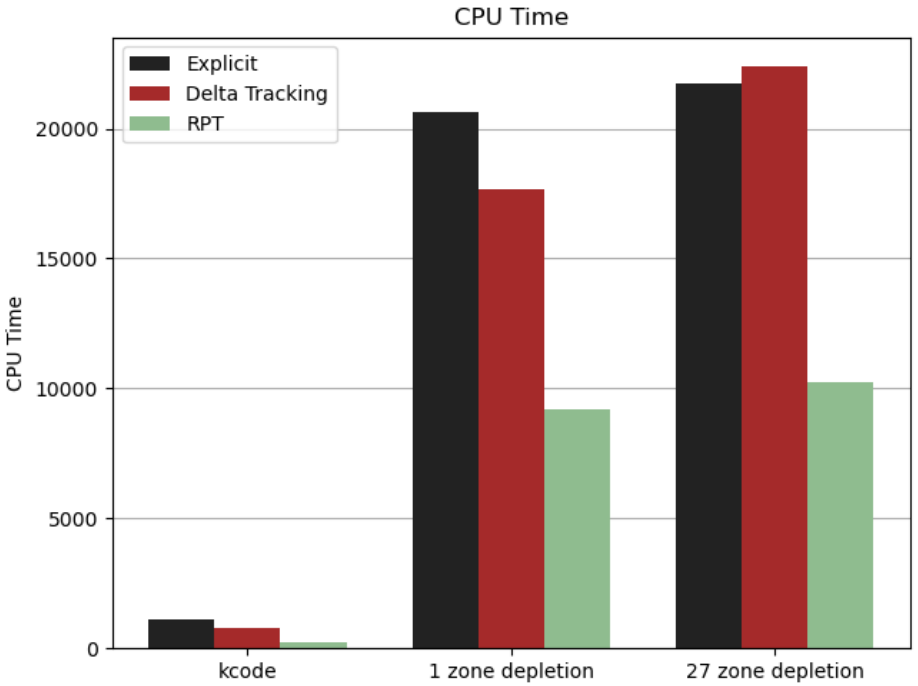

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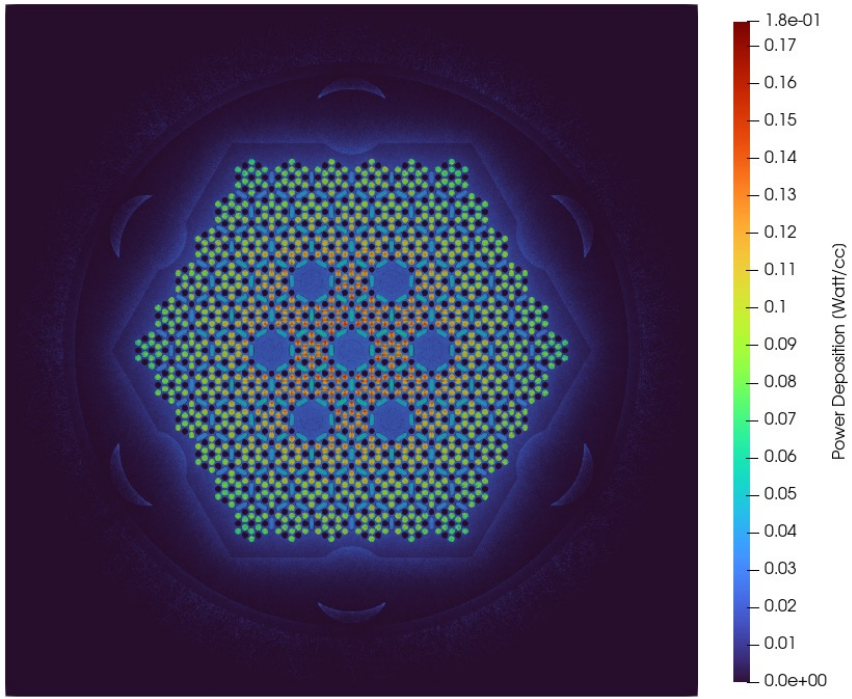

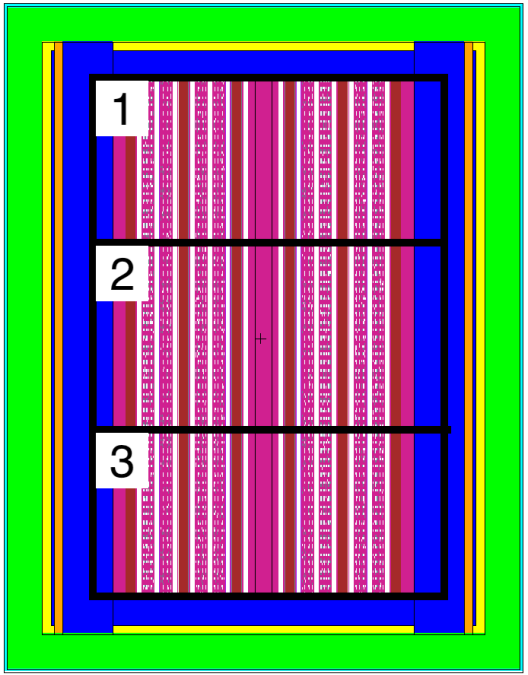

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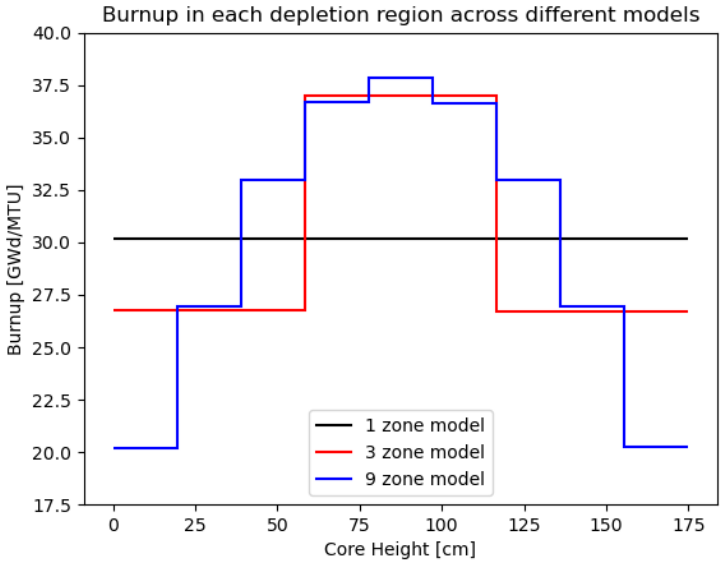
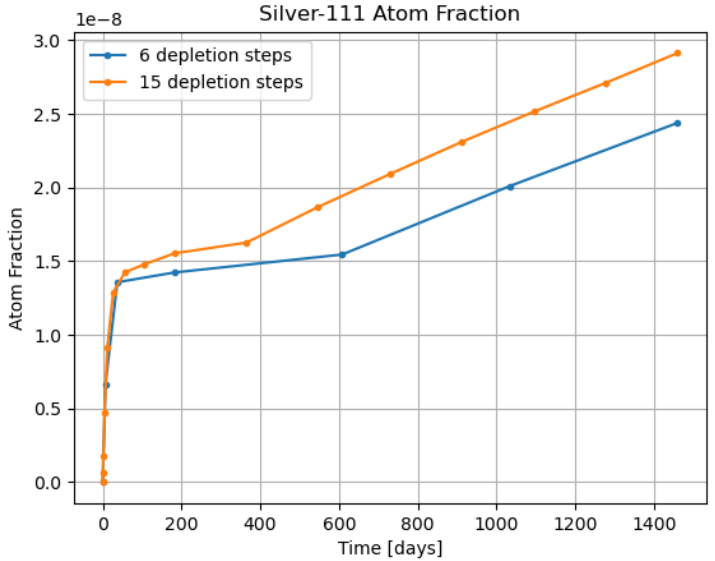
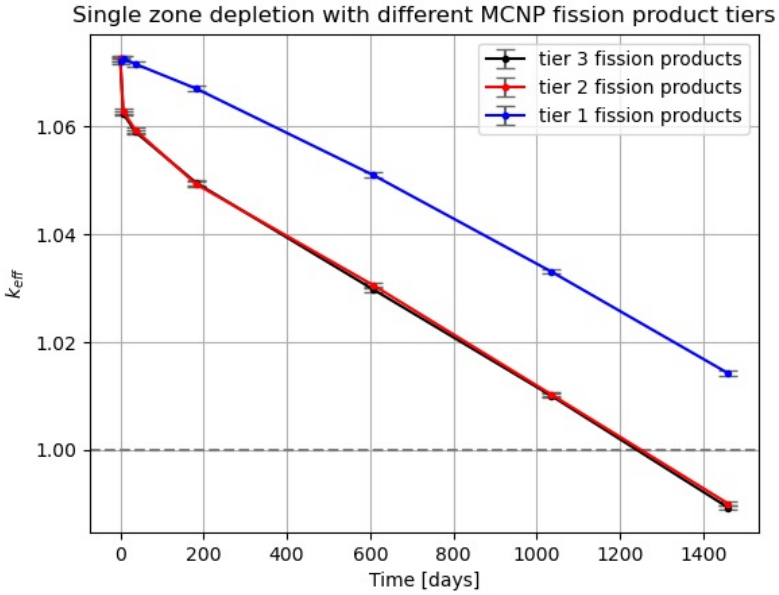




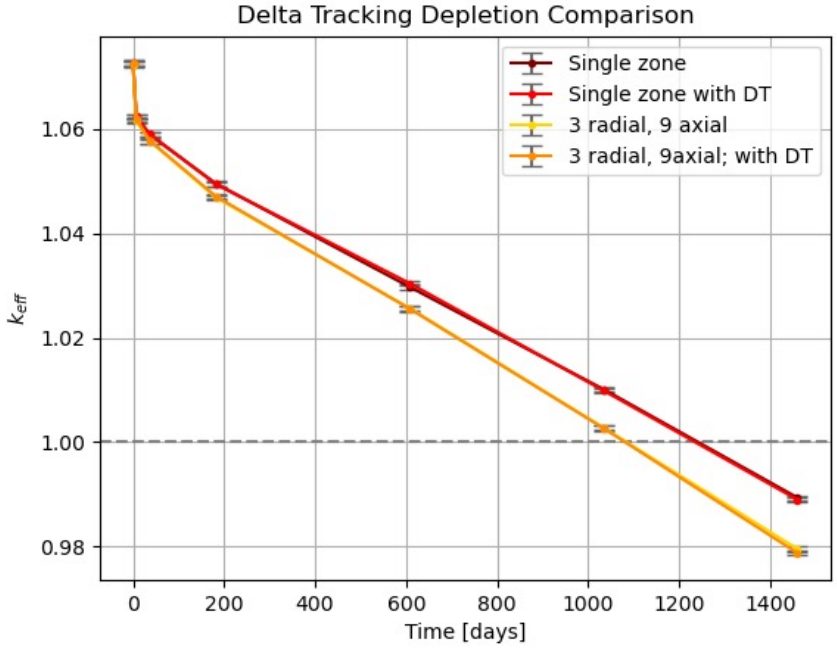
Extra Slide: Tracked Isotopes

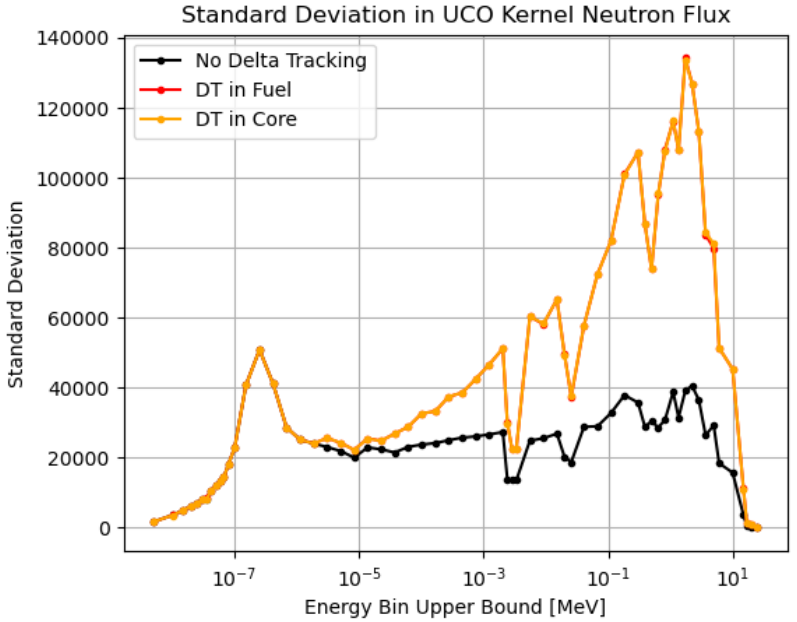
- Tier 1 FP: 49 isotopes
- Tier 2 FP: 117 isotopes
- Tier 3 FP: 250 isotopes

- Observations:
  - Tier 2 CPU time +31%
  - Tier 3 CPU time +45%
  - Significant ^{155}Gd difference between FP tiers 2 and 3

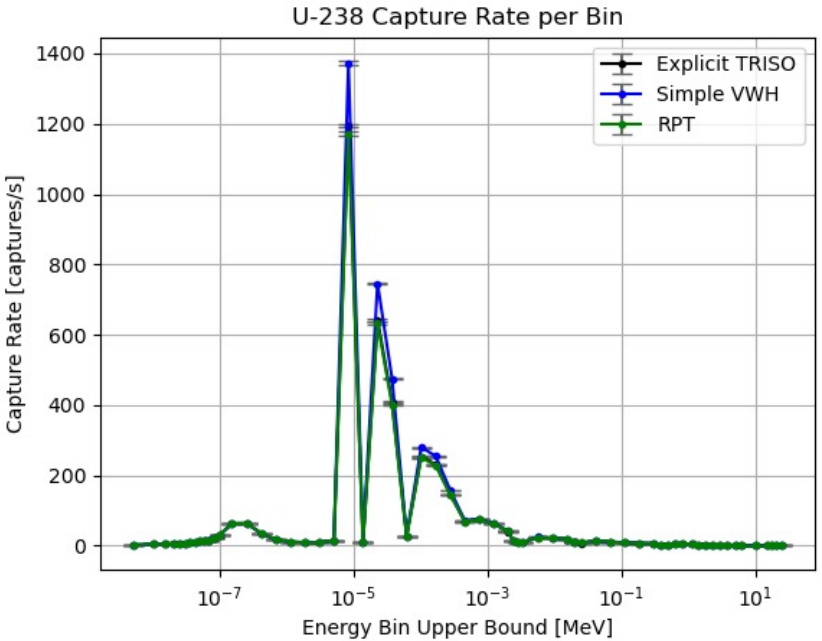


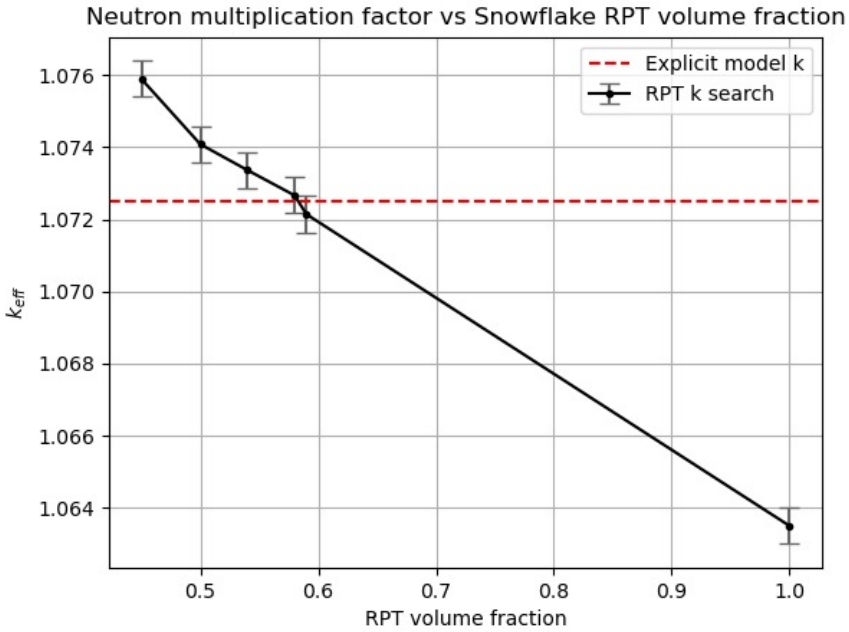
Extra Slide: Tracked Isotopes



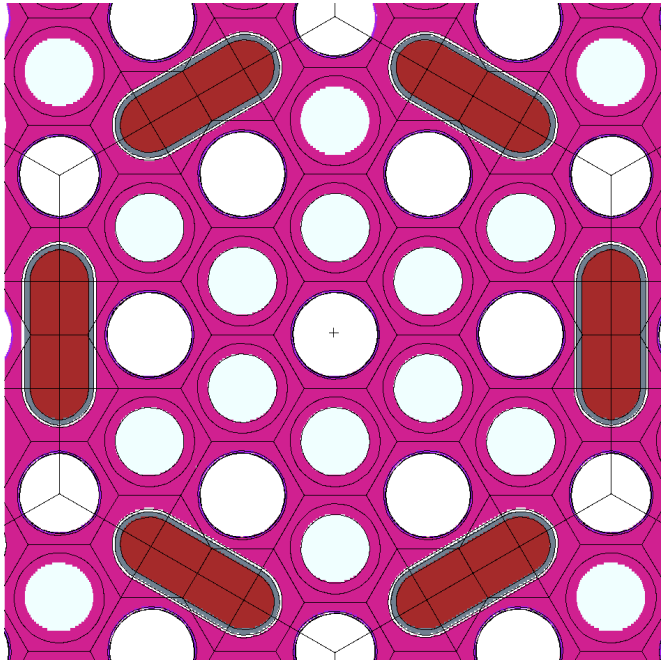


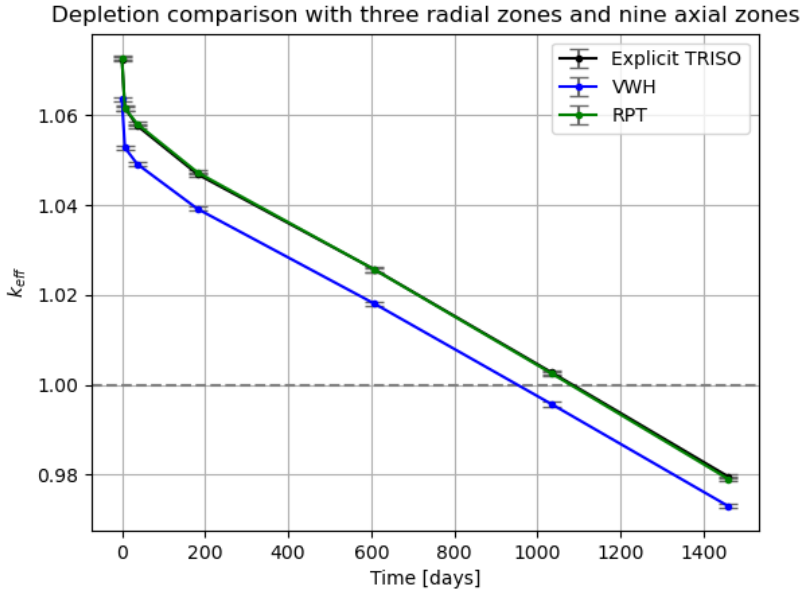
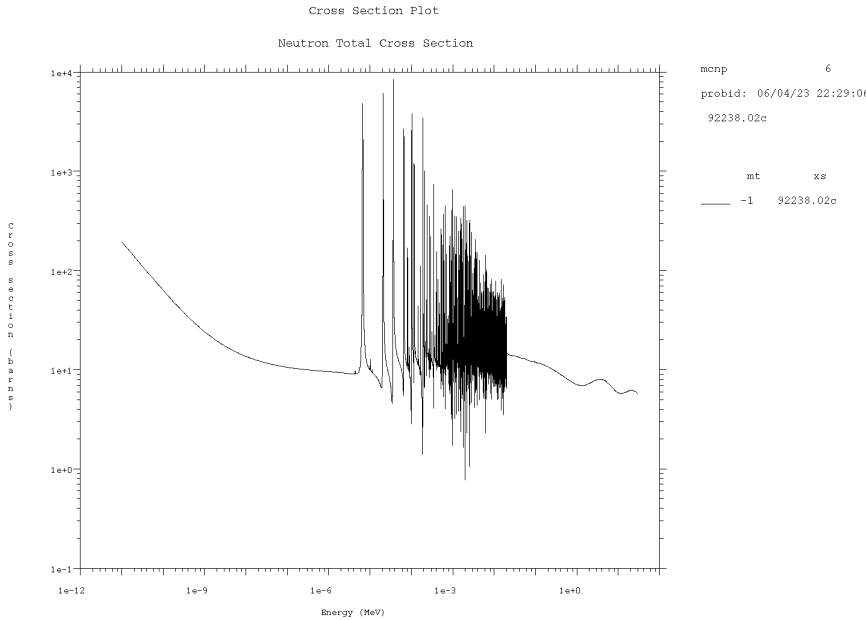
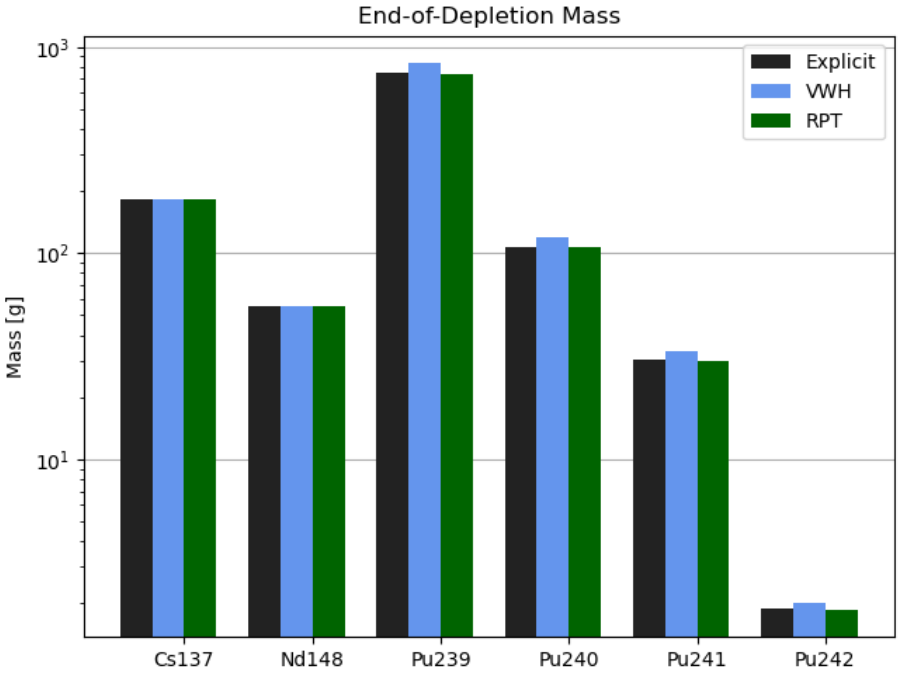
Extra Slide: RPT figures





Reactivity-Equivalent Physical Transformation





Extra Slide: U-238 Total Cross Section