

Transient Thermal Analysis of Calorimeters used in the ACRR

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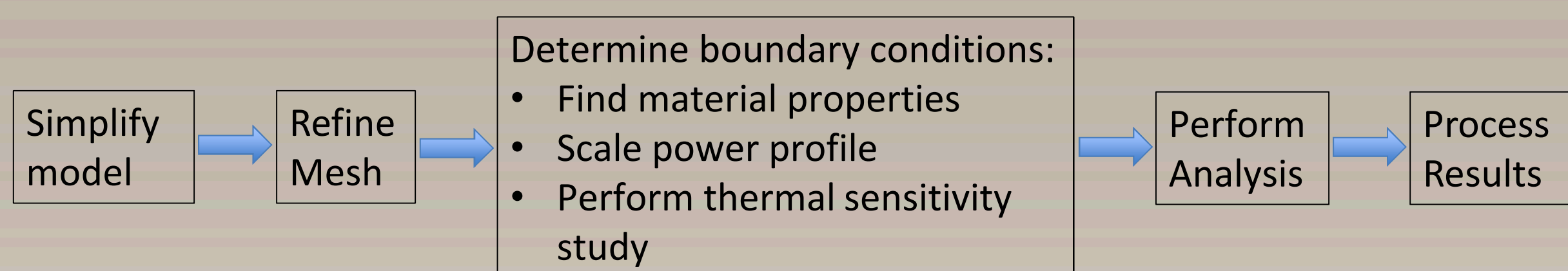
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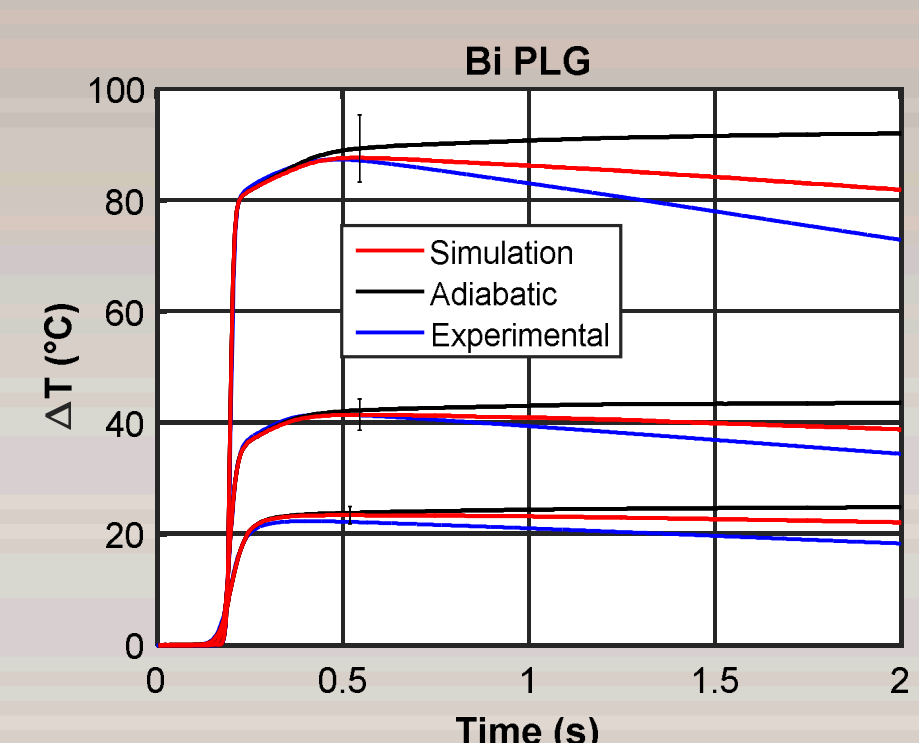
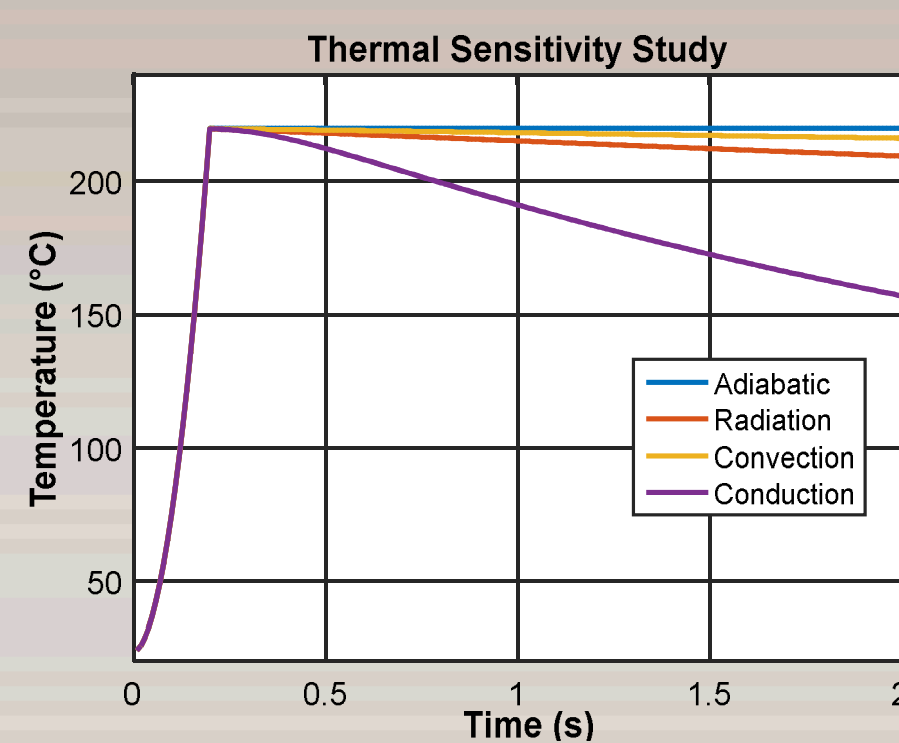
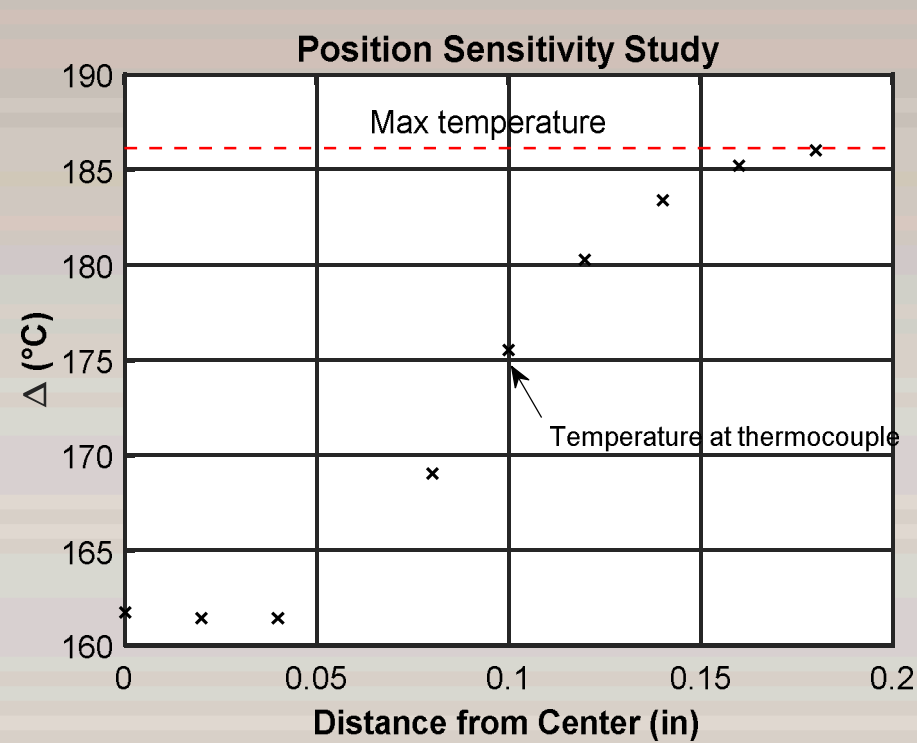
Purpose:

Calorimeters are used in the Annular Core Research Reactor to provide active gamma dosimetry. Experimental results were not matching computed MCNP results which led to the question why? A transient thermal analysis using SolidWorks Simulation was performed to better understand the calorimeter's thermal properties.

Method:



Results:



Discussion:

Three observations can be made from this analysis:

- The best place for the thermocouple to be positioned is towards the outer perimeter of the disc.
- Conduction is the most dominant form of heat transfer and in order to improve the fidelity of the measurements conduction must be minimized.
- The MCNP *f8 tally provides the most accurate gamma radiation dose.

Acknowledgements:

I would like to thank Ed Parma and Billy Martin for their help and patience with this project.