# Design of a PID Controller for a Molten Salt Microreactor Master's Plan

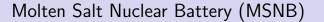
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### Outline

- Scope
- 2 Applied Literature Review
- 3 Future Work
- 4 Final Remarks

Scope



Molten Salt Microreactor...Goals... Blah... tikz figure would be good

# Background on MSNB

### **Neutronics**

[1]

#### Thermal Hydraulics

[2]

### **Process Control**

Me

[2] Carter, J. P., 2022. Multi-physics investigation of a natural circulation molten salt micro-reactor that utilizes an experimental in-pile device to improve core physics and system thermal-hydraulic performance.

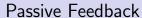
Ph.D. thesis, Univesity of Idaho

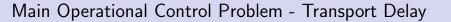
[1] Peterson, J., 8 2019. An analysis of the nuclear characteristics of a molten salt microreactor. Master's thesis, University of Idaho

## MSNB design

Figures from plotter (neutronics paper?), with a focus on control actuation

# Applied Literature Review





Time-Variance and Non-Linearity

### Future Work

# Control Drum Characterization MCNP

### **Process Simulation**

Python

# Controller Tuning

MATLAB-Simulink

Python

### Timeline

Table: Timeframe for Execution of Project

Tasks	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Control Drums	X	X	X				
<b>Process Simulation</b>		X	X	X			
Controller Tuning				X	X		
Implementation					X	X	
Cross-Cutting						X	X
Defend							X

### Final Remarks

### Other Considerations

### Discussion

### Acknowledgements

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#### References

- 1. Peterson, J., 8 2019. An analysis of the nuclear characteristics of a molten salt microreactor. Master's thesis, University of Idaho.
- 2. Carter, J. P., 2022. Multi-physics investigation of a natural circulation molten salt micro-reactor that utilizes an experimental in-pile device to improve core physics and system thermal-hydraulic performance. Ph.D. thesis, University of Idaho.