SRF cavity testing fixture design and HOM simulations.

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5 Minutes 5 Slides

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Overview

- **Who**: SIST intern. Junior Electrical Engineering student at University of Kentucky.
- **Where**: supervisor Michael Geelhoed and Ram Dhuley in the IARC.
- **What**: Light mechanical design and thermal simulations of multi-cell SRF cavities with conduction cooling. This will be used for 1.5 cell and 4.7 cell cavities.
- **How**:
  - Task 1: Software
  - Task 2: Fixture design
  - Task 3: HOM simulations

Task 1: Software

Required software: access through VPN and remote desktop

- NX 11
- Ansys
- COMSOL

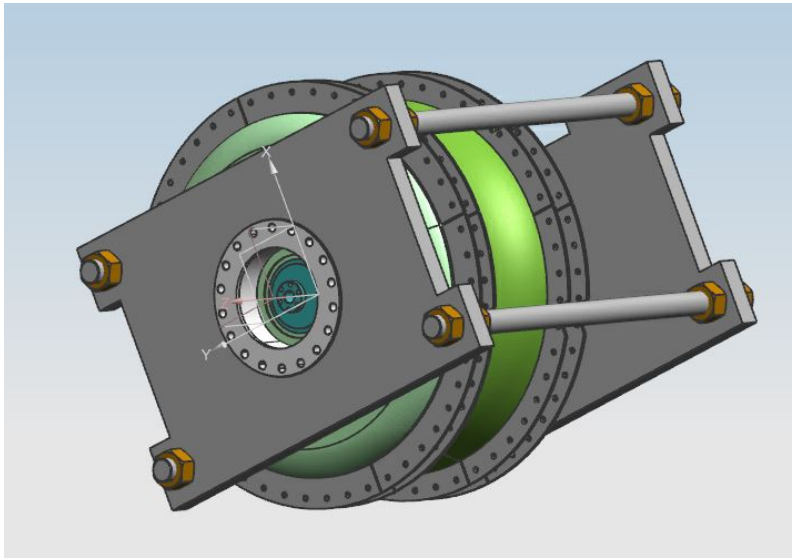
Working on learning and using NX11 right now.

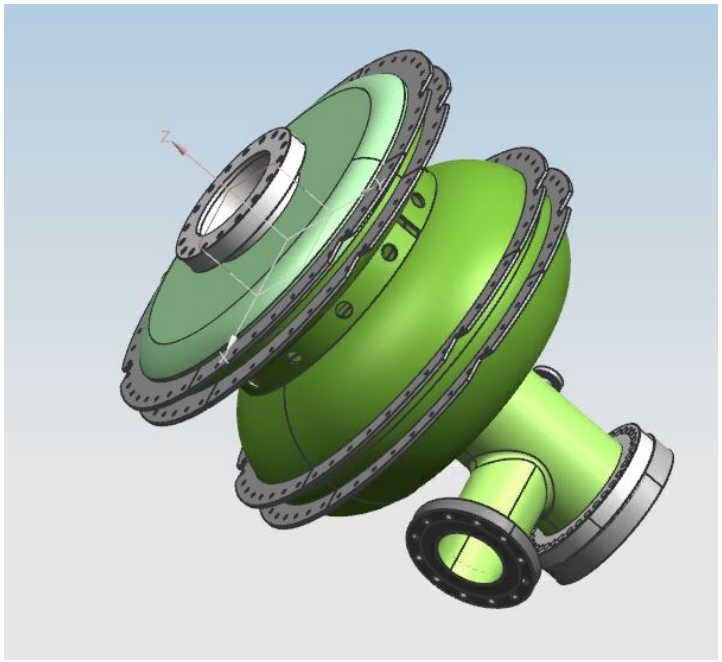
Ansys and COMSOL will be needed for Task 3.

Task 2: Fixture design

Fixture is design to give structural support to the RF cavity after a vacuumed has been pulled in a clean room.

- Simple flat cut
- Two horseshoes design





Task Three

HOM simulation of the conduction cooled SRF cavity and produce results for a HOM analysis of a 4.7 cell cavity.

- Import Solid Words model with NX
- Simulate in COMSOL

Thoughts

Overall I am happy that I get to try something new.

Expected Challenges:

- Never ran thermal or EM simulations before
- New to the software being used
- Working from home is something new to me

Thank you so much for this opportunity!