

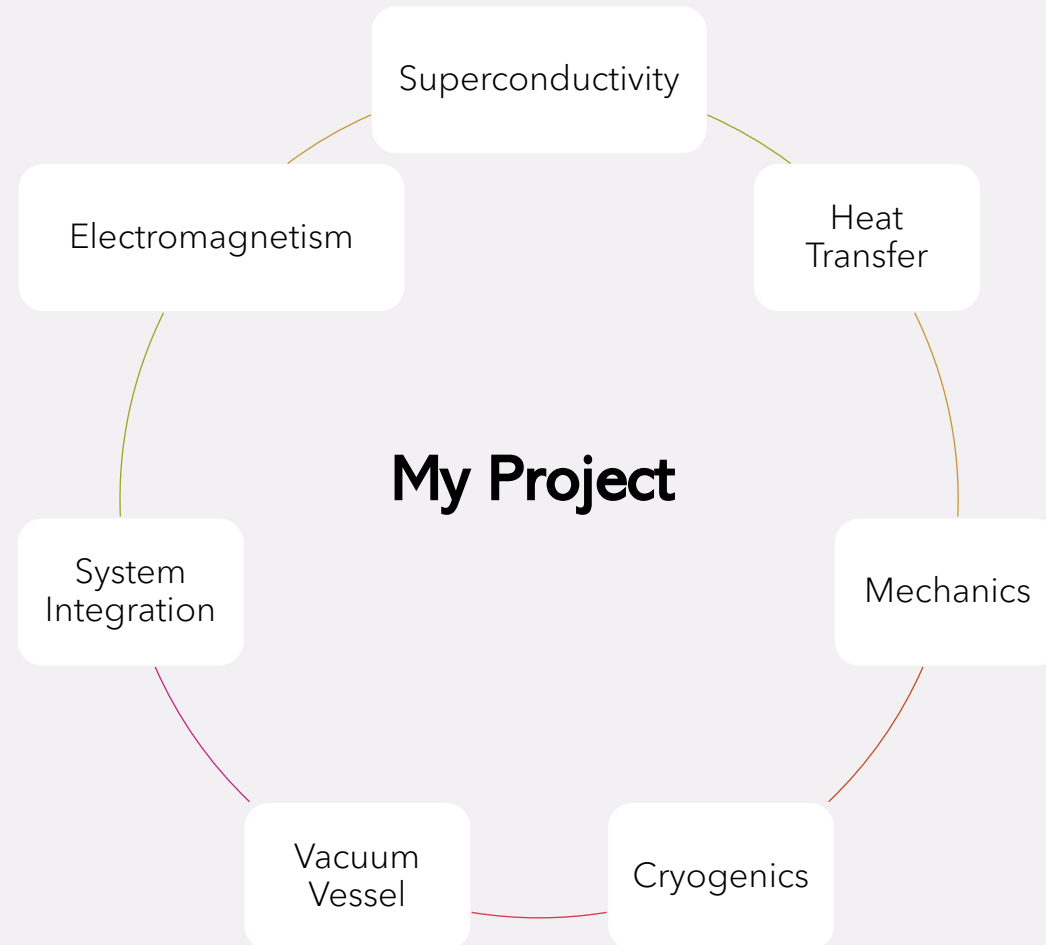
Suspension System for Superconducting Magnet

Reina Martin

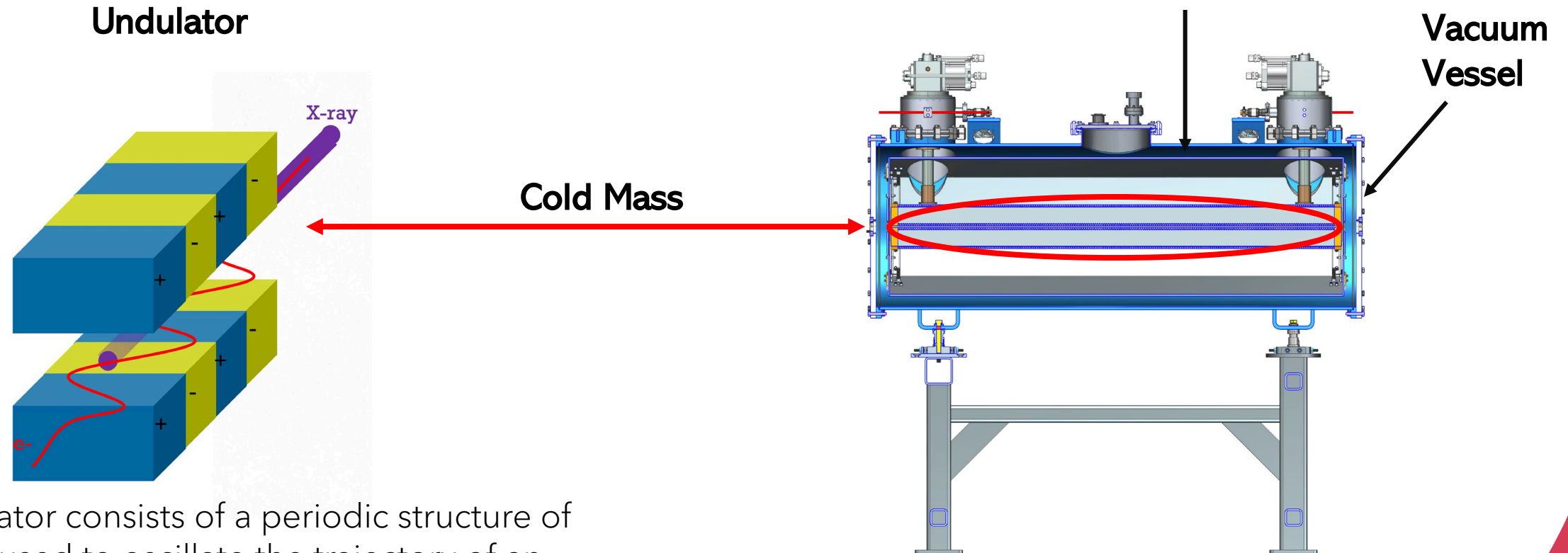
June 16, 2021



Cryostat Design



Superconducting magnets



- ✓ An undulator consists of a periodic structure of magnets used to oscillate the trajectory of an electron beam
- ✓ Used to create light sources
- ✓ Goal: How to suspend cold mass and thermal shield?

- ✓ Vacuum vessel = eliminates convection
- ✓ Thermal Shield = eliminates radiation
- ✓ Proper suspension = reduces conduction

Further Goals of the Suspension System



Keep magnets in position after they are cooled to 4 K



Support cold mass and thermal shield within the cryogenic vessel

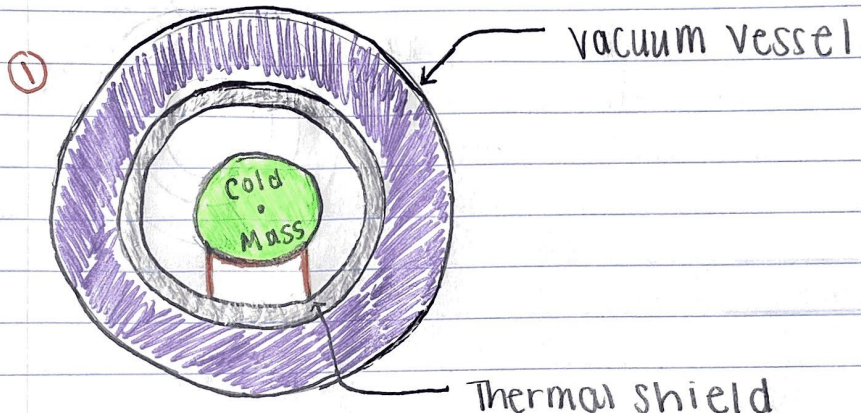


Compensates for material shrinking and related mechanical forces

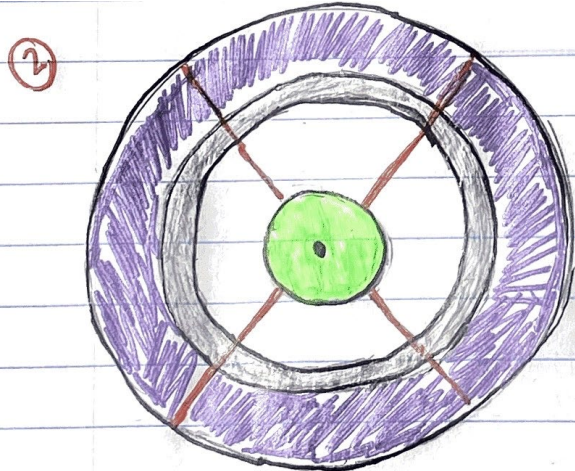


Minimizes thermal loads within the vacuum vessel

Next Step...



Pros: Mechanically stable
Cons: Generates more heat



Pros: Generates less heat due to small, thin rods
Cons: Must compensate for stretching/shrinking