

Weekly Summer Accelerator Updates

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Last Week's Goals

- Get Ansys installed on loaner laptop
- Start working with Ansys
- Look at Emily's files
- Understand what Emily had done so far

Progress

- After a lot of back and forth with Services, got Ansys software installed on Monday
- Unfortunately I cannot open Emily's files because of version incompatibility
 - Reached out to her, waiting to hear back
- Have been trying to recreate her model from memory while getting comfortable with Ansys
- More details on next slide!

Next Week's Goals

- Attend Vadim's group meeting tomorrow, confer with Emily
- Continue working on the geometrical modeling and FEA models I've started on this week

First attempts at Ansys modeling: helical windings, REBCO films, and tape deformation analysis

Design geometry

Define material properties

Generate FEA mesh

Apply forces, boundary conditions

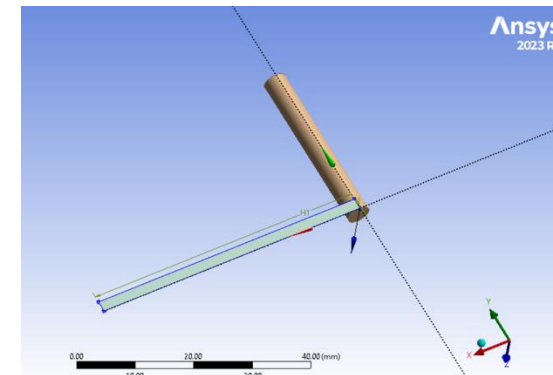
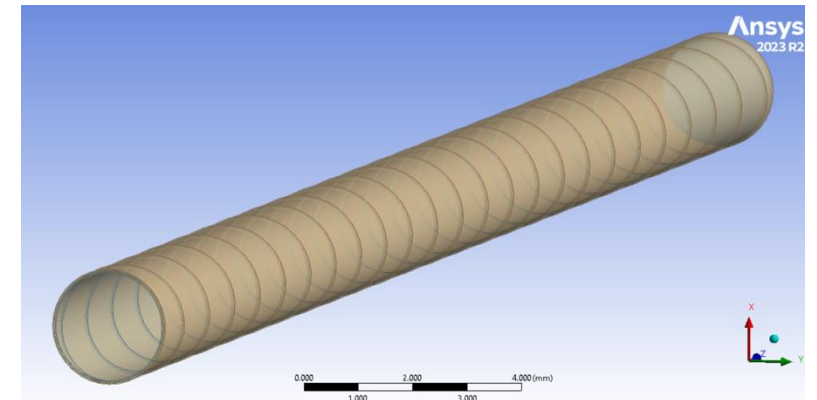
Solve model

Designed two different geometries:

- Helical REBCO, copper, Hastelloy tape wound around a Cu cylinder (simplified STAR wire)
- Same tape design, not yet wound (to understand the stresses undergone during winding)

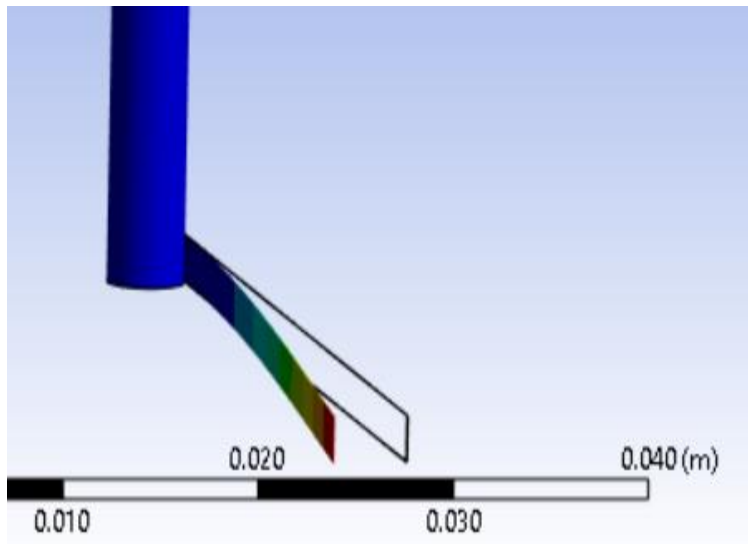
Used the material properties and rough tape design from [this paper](#)

For the second geometry, took a look at the deformation and stresses for the first step of a winding process...

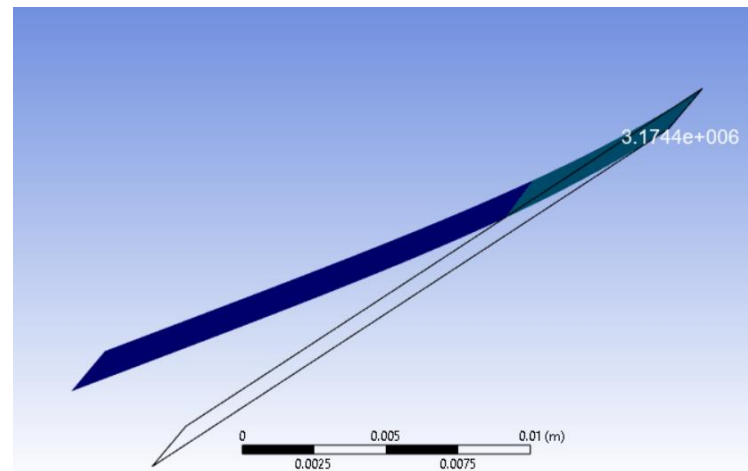


Preliminary Takeaways

- REBCO (on neutral central plane) suffers minimum strain
- Hastelloy layer has the highest strain
 - This is okay because it's still a few orders of magnitude lower than its yield strength



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