

# Sheath status

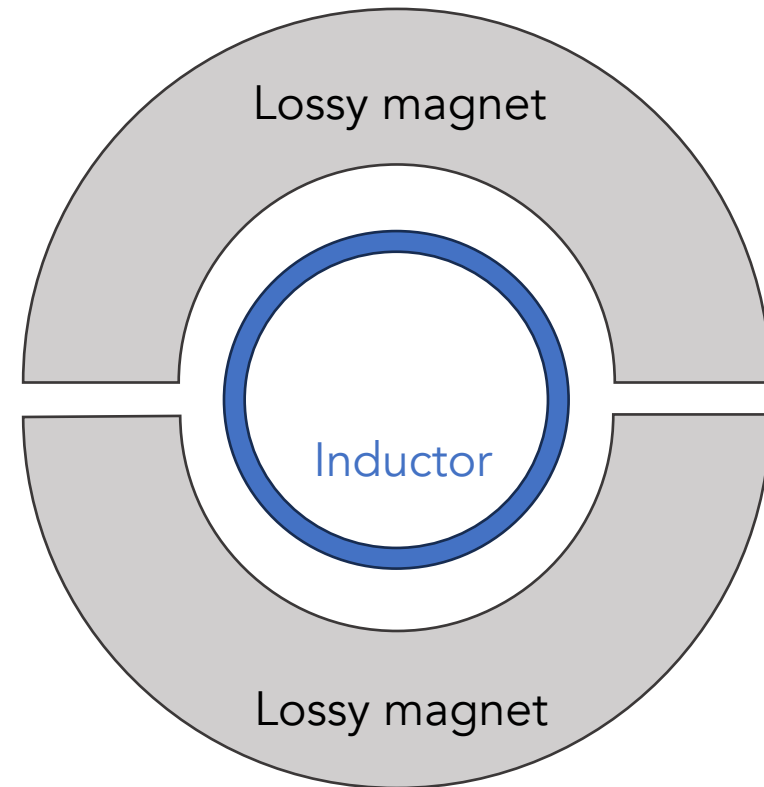
Nicholas Rapidis

DMRadio Collaboration Meeting – October 2025

# Sheath motivation

Sheath is **not** required for an axion search

The magnet and the inductor alone would be able to search for an axion

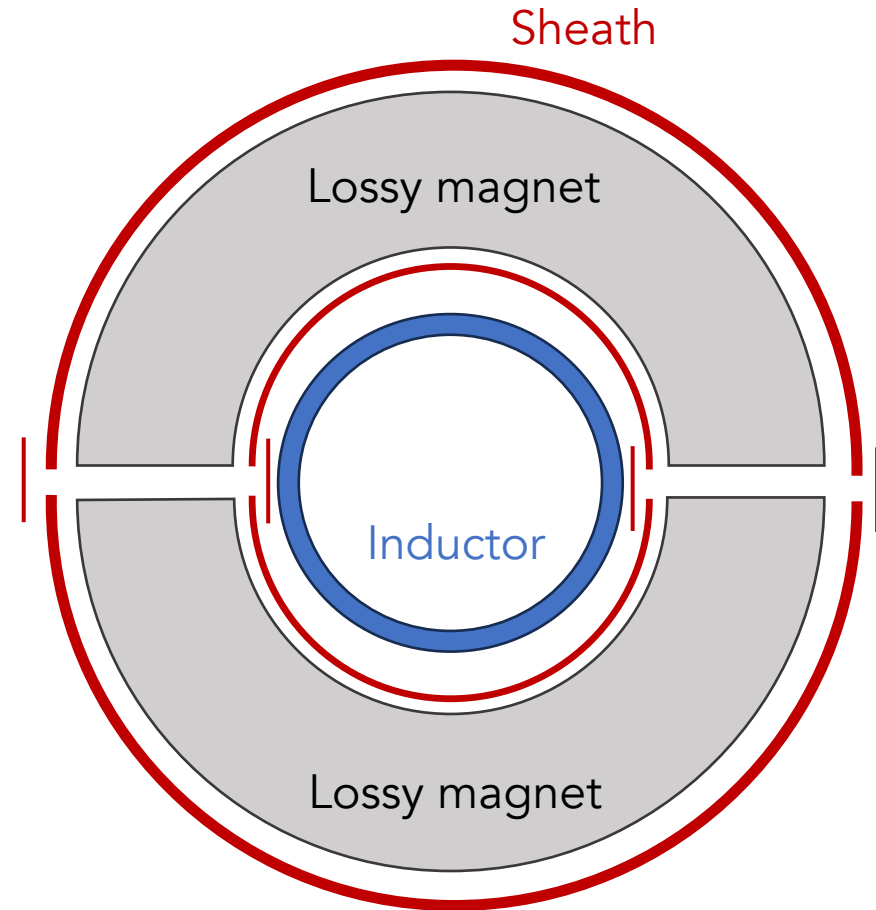


# Sheath motivation

Sheath is **not** required for an axion search

The magnet and the inductor alone would be able to search for an axion

Sheath hides lossy magnet from resonator while allowing the axion signal to still couple to inductor



# Design Status

Sheath design is mostly complete.

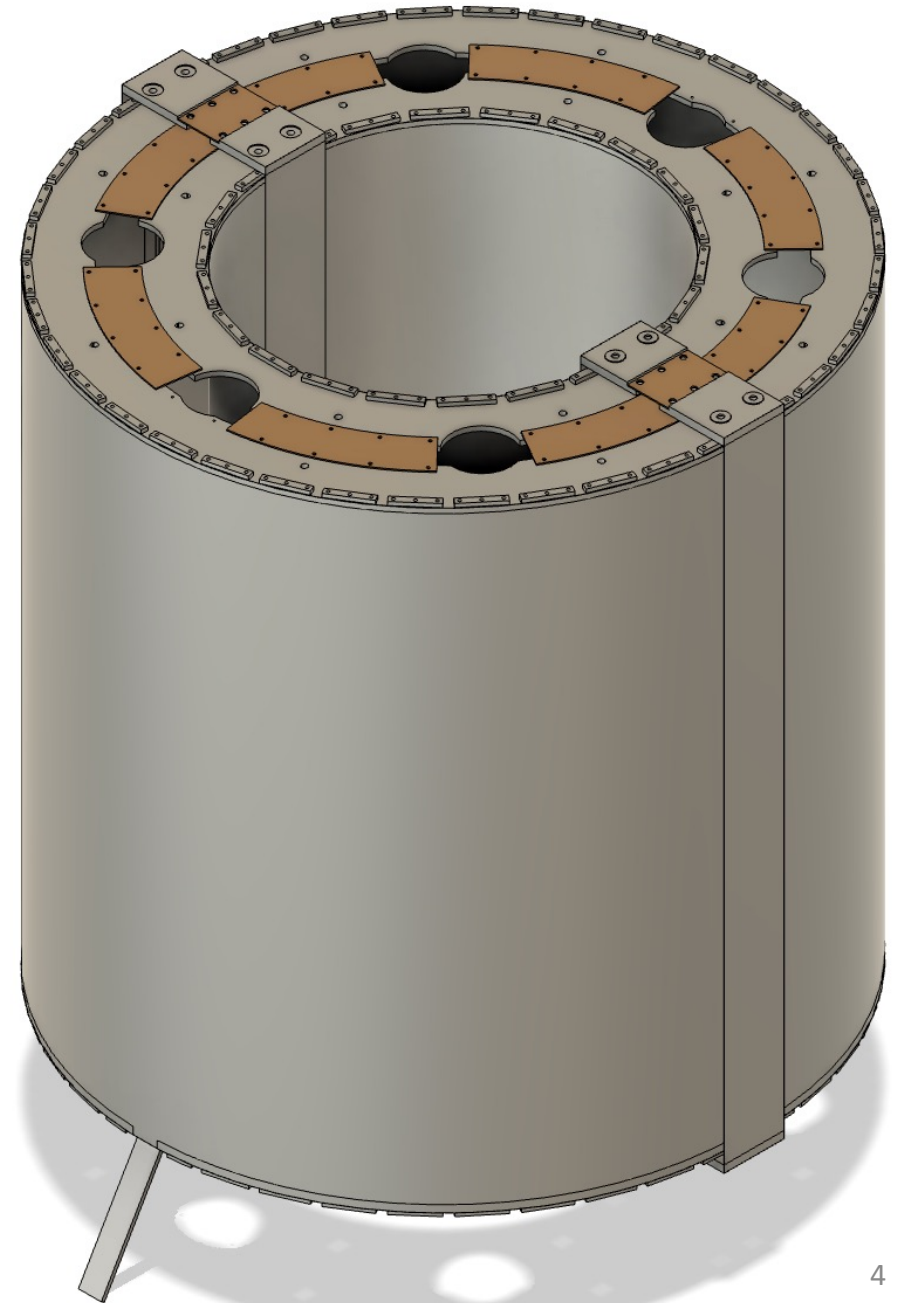
Outstanding items:

Can mostly be done now

1. Finalize gasket cover design
2. Finalize snorkel design

Should wait for final version of magnet:

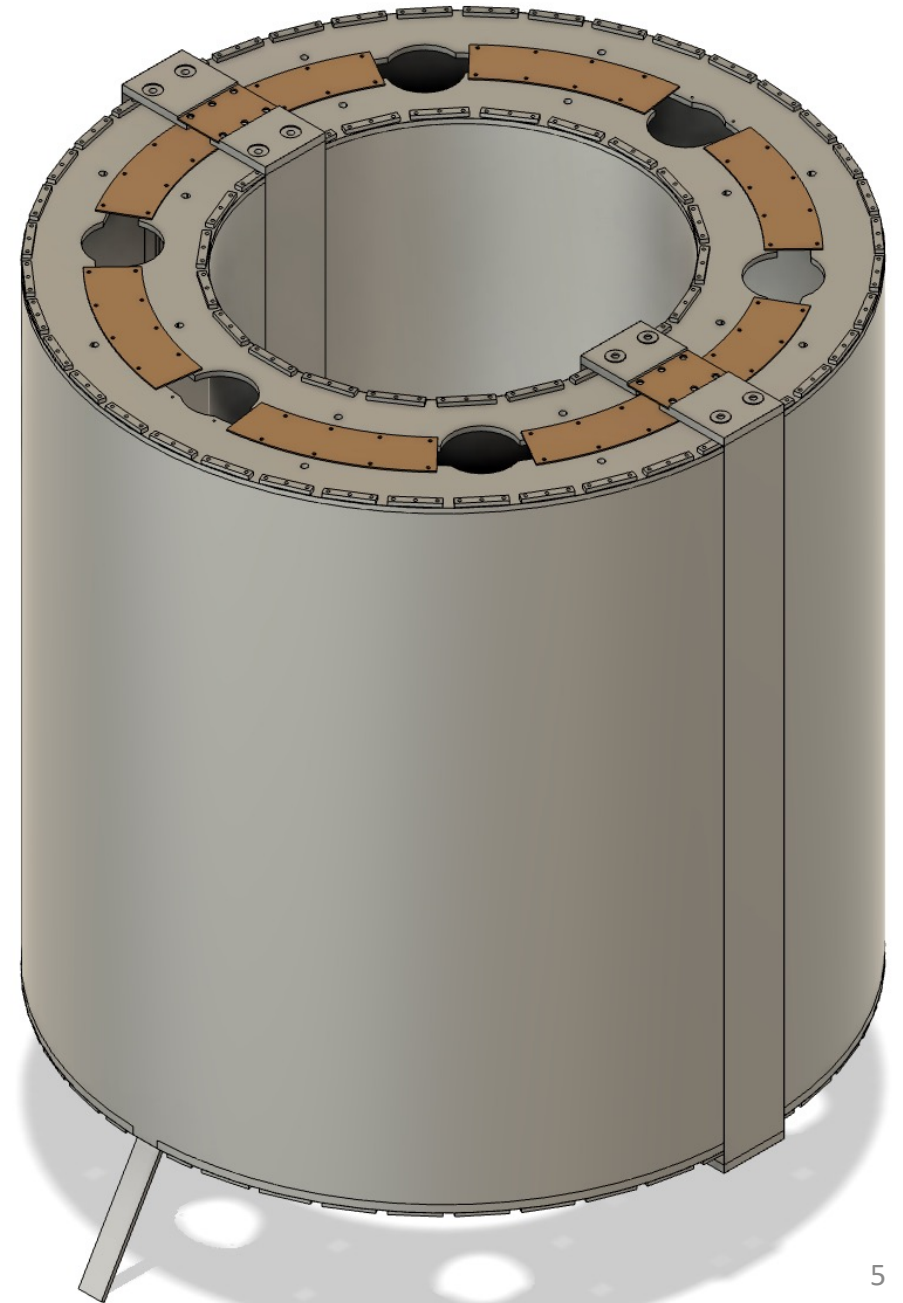
3. Exact plate + sleeve design  
(precise location of through holes  
etc)



# Materials Status

## Materials:

- Niobium for top/bottom plates: at Stanford
- Foil for walls: at Stanford
- Niobium screws: at Stanford
- Phosphor bronze for gasket: need to procure, readily available
- Alumina washers for sleeve-sheath isolation: need to procure, on McMaster

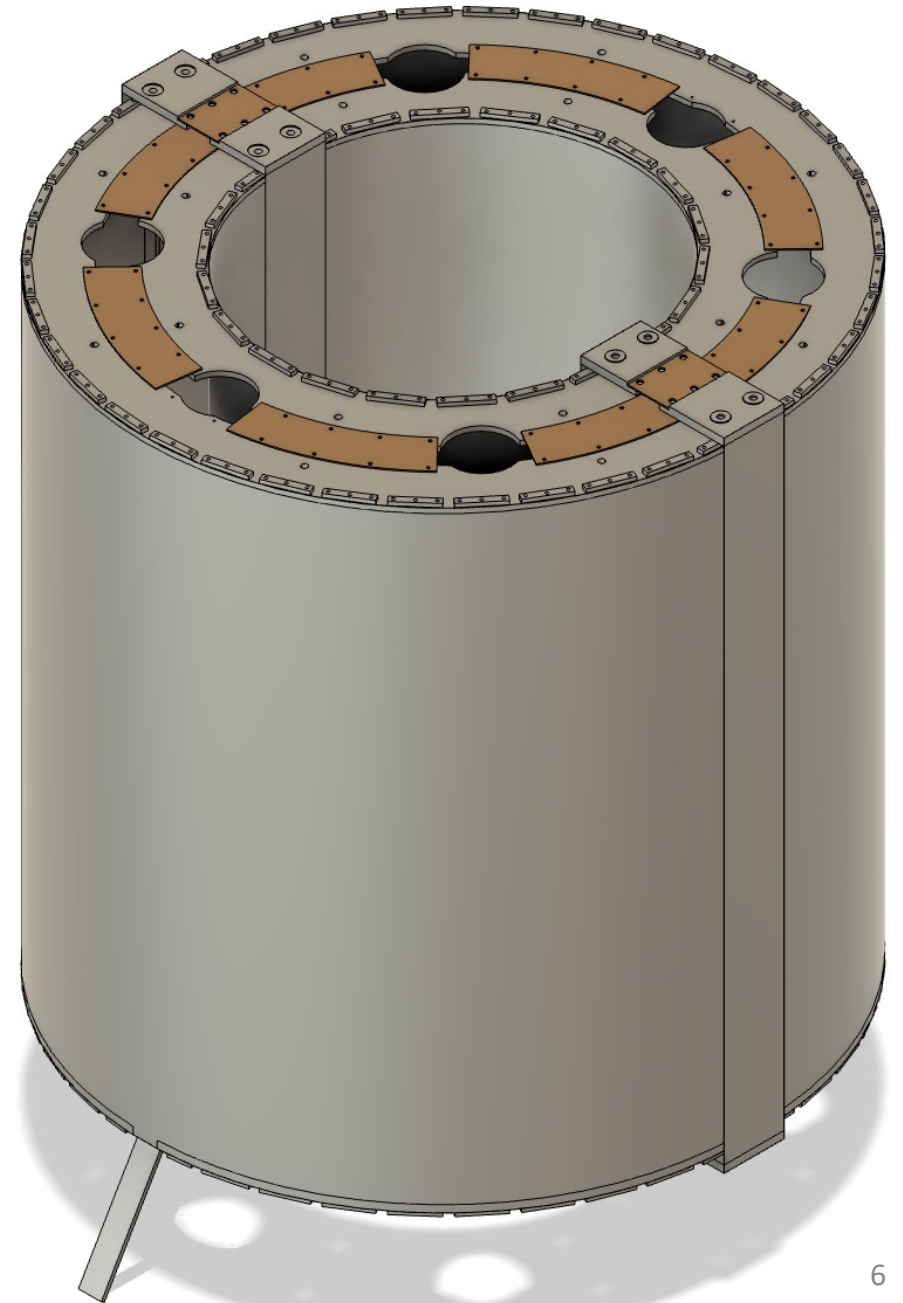


# Machining Status

*Rembar* in Pennsylvania is still willing to take on the machining project. They say they can work with our pre-existing niobium plates.

They cannot formally provide a quote until drawings are completed.

Need to ask for lead time on the machining



# Summary

Once magnet final magnet dimensions are confirmed, materials will be procured immediately and quickly. Small design choices can be finalized before that.

Only high lead time item is plate machining