

# 2025 review & TDR needs

**Thermal studies:** measurements, calculations, ANSYS simulations,  $\Delta T$  confirmations

**Mechanical studies:** vibration, strength tests, FEA, CC choice, material budget calculations

**Module assembly:** tooling development, sensor handling, alignment and tolerances

**Disc assembly:** tooling development, module handling, alignment and tolerances

**Disc layout:** pitch & height decision, sensor placement

**FPC needs:** sizes, variations, requirements/preferences

**Disc prototype (as large as possible):** understanding of module assembly/handling, tooling

# Towards the Oct 2025 review, pg1

**Thermal studies:** *Nikki, Nick (late March), Austin (until May), Katie (~few hrs/week until May)*

- **Ongoing:** data taking, calculations (*Nikki, Austin, Katie*)
- **Needed:** ANSYS simulations, air routing,  $\Delta T$  confirmations (*Nick, Nikki*)

**Mechanical studies:** *Nikki, Nick (late March), Skye (until May?), Technicians*

- **Started:** Flexural tests, FEA natural frequency, material budget calculations (*Skye, Nikki*)
- **Needed:** Vibration studies, carbon composite choice, analysis changing height/pitch/radius of curvature/angle (*Nick, Nikki, Technicians*)

**Tooling:** *Nikki, Austin (until May), Jim? (April)*

- **Needed:** design (*Nikki, Jim?*) and production (*Nikki, Austin via 3D printer*)

# Towards the Oct 2025 review, pg2

**Module prototypes:** *Nikki, Austin (until May), Skye (until May?), Katie(?)*

- **Ongoing**: Producing & cutting K13CU, simple thermal prototypes (*Austin, Skye*)
- **Needed**: glue choice, alignment procedure, tooling (*Nikki, Austin, Katie?*)

**Disc prototypes:** *Nikki, Skye (until May?), Nick (late March), Jim (April)*

- **Ongoing**: Producing corrugated pieces, simple thermal prototypes (*Austin, Skye*)
- **Needed**: glue choice, alignment procedure, tooling, handling (front & back) (*Nikki, Katie?, Nick, Jim*)

**FPC needs (mechanical):** *Nikki, Zhenyu, Zhengwei*

- **Started**: Identifying requirements/preferences (*Nikki, Zhenyu*)
- **Needed**: Total number of variations, connection points, inclusion into design (*Nikki, Zhenyu, Zhengwei*)

# Some notes on Workforce & Timelines

Workforce fluctuating in the next few months

- Engineering effort expected to come back online in ~1 month
- Student effort transition in May

Expect more stability in the summer, but likely another reduction in the fall

With current workforce, we can expect, at best, a steady state. However, we need to ramp up for pre-TDR and the Fall review

A lot of tasks are dependent on others → slow down on one has a ripple effect

# How to get involved

## Lab work

- Get added to the WPC (email Nikki) and take required trainings
- Go through OTJ training with Nikki
- **3D printer** → requires reading documentation and signing a form
- **Radiological sources** → separate WPC & training required

## CAD work

- Access to CAD software → Through one of the windows machines (needs to be coordinated to be shared with others) or on other lab-owned machine