Test beam mirror production

Kong Tu, BNL/SBU

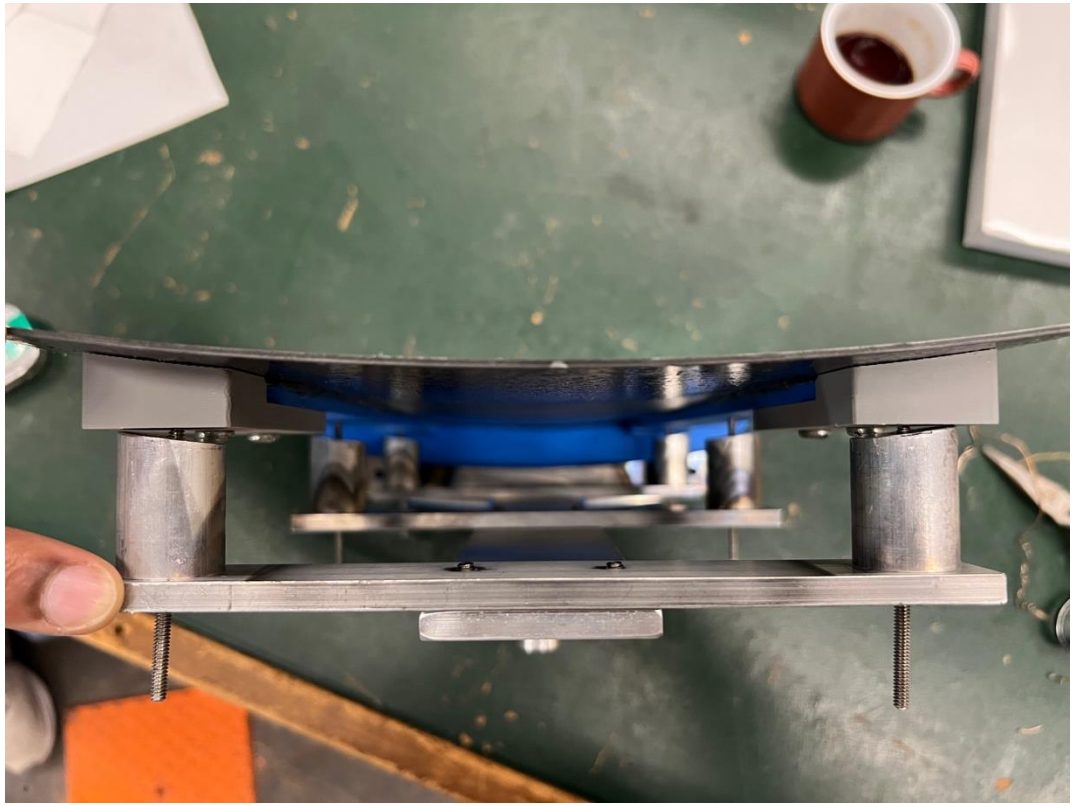
May 4, 2026

(coating performed May 1, 2026, with Aiden, Mahmodol, Kyle, and Kong)

Status

- Evaporator works well, except for a few minor issues that are not critical at the moment. (might be an issue soon.)
- Mirror substrate contamination observed as usual, but this one seems pretty bad. (need reflectivity test after *Jihee is back from DIS*)
- The backing structure 3D printed part is not fit to the fixture, coating was done secured via wires (students figured it out.) next slide.

3D printed foot and backing



Issues: i) alignment of screw holes (pattern) ii) the shape of the 3D printing part is not curved as the mirror or fixture. Iii) the extra printing part is thicker than the rest.
Suggestion: we can ask SBU students to work on the 3D printing file if Simon can share, we can iterate here to fine tune the fitting. (will be one of their summer project then.)

Summary and outlook

- During the summer, a few things may or should happen:
  - The cryo pump was just cleared to be transferred. Kong and Jaydeep need to work on a solution to move it. If that's successful, the next big job is to install the cryo pump. Significant downtime is expected.
  - The chiller pump needs to be repaired (our old pump).
  - The rotary motor for evaporating needs a maintenance, because we heard some unpleasant sound coming from it, which needs some attentions.
  - **Figure out the mirror without CF backing and show a proof-of-principle mirror that has great quality with high reflectivity and no visual contaminations.**
- Summer (06.01.2026 - 08.07.2026):
  - **Mahmodol** will be working at BNL as SULI student, doing mirror testing and other work with **Li Xu** (a new postdoc)
  - **Aiden** and **Kyle** will be the primary operator of the evaporator at SBU (2 coatings a week + maintenance work)