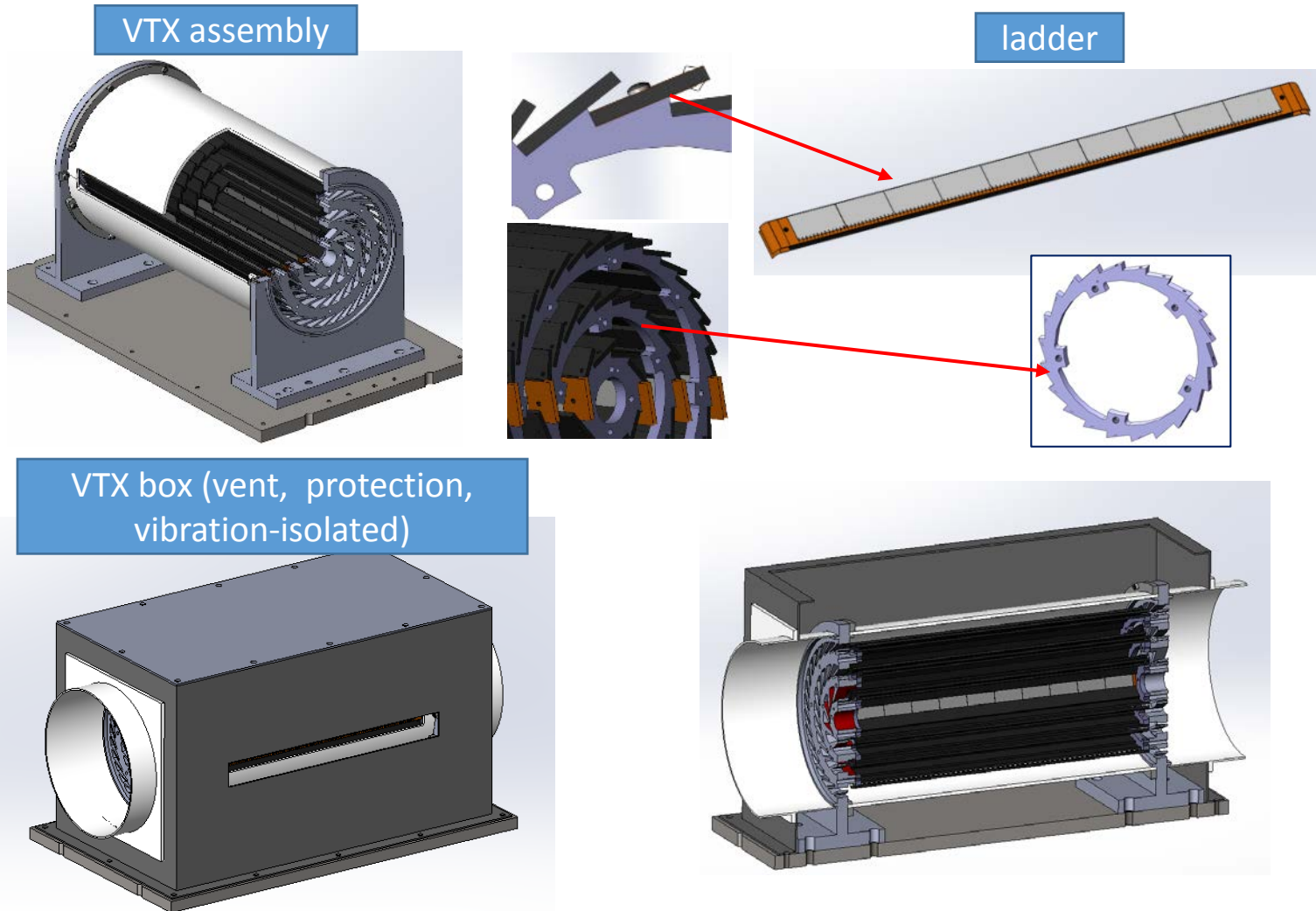


Status of the VTX prototype support structure

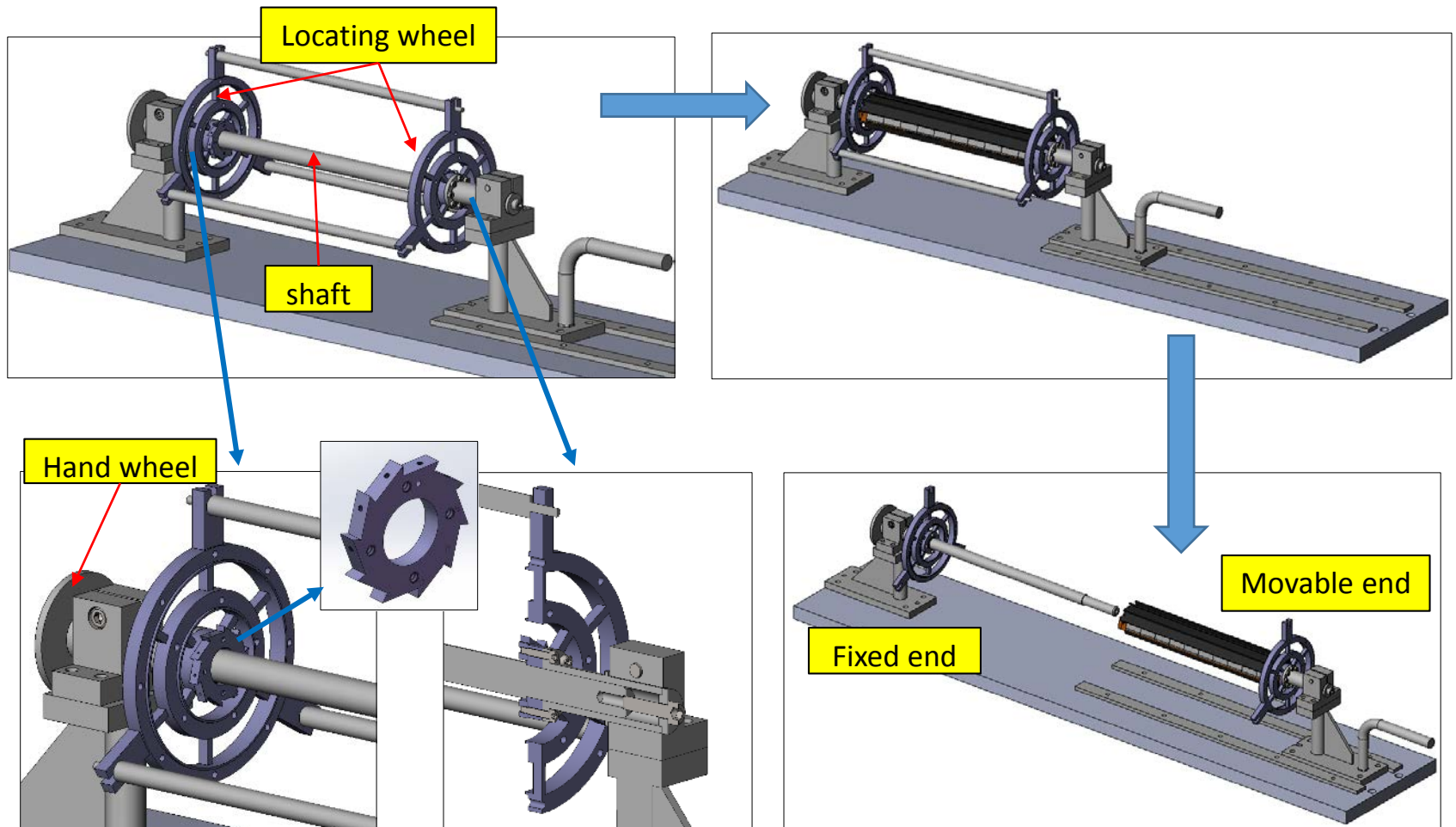
Jinyu Fu

2022/11/16

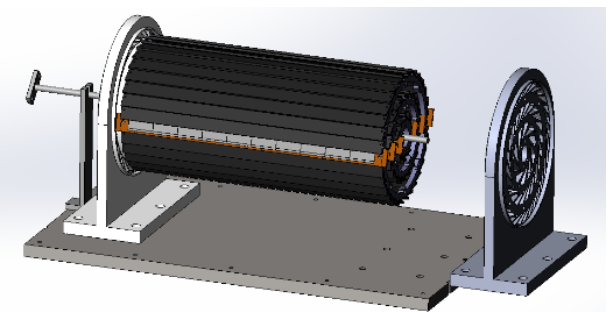
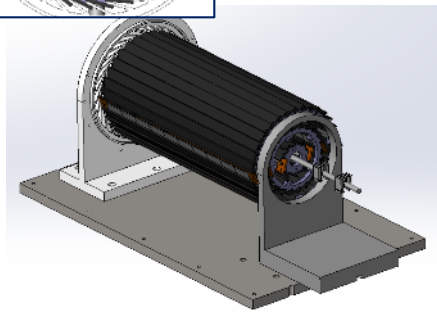
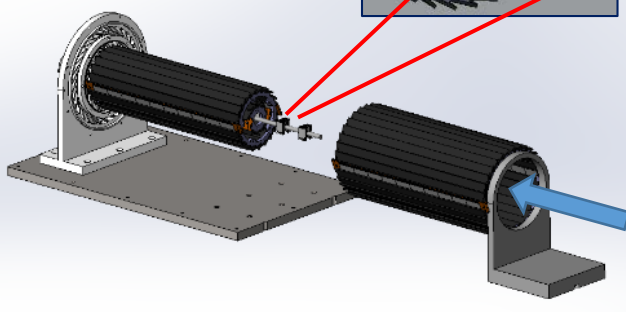
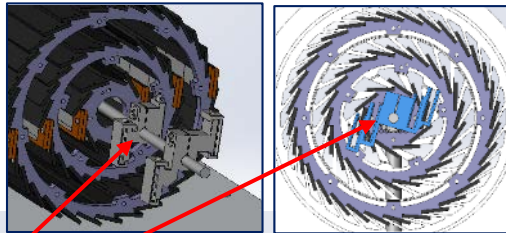
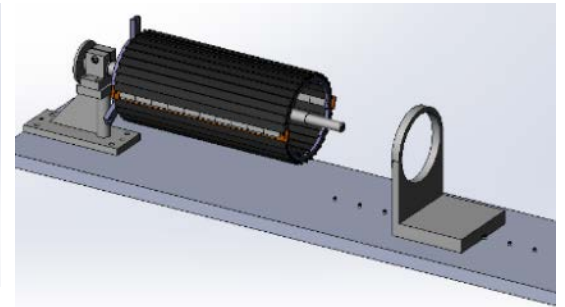
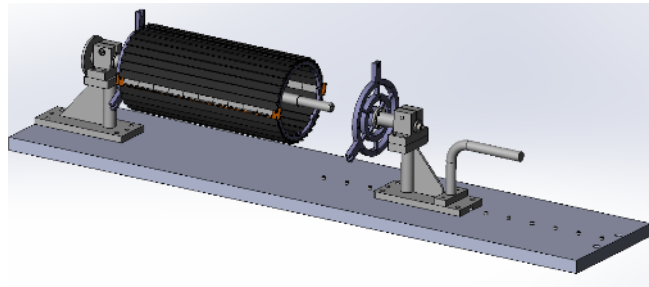
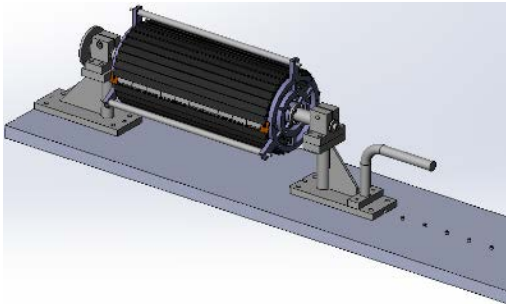
Support structure design of the VTX prototype



Tooling design for barrel assembly



VTX assembly Scheme

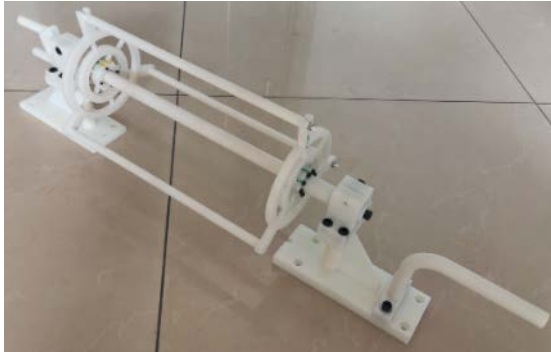
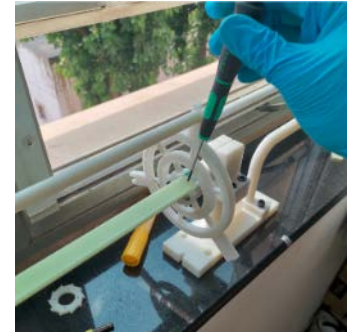


Mockup - barrel assembly on the tooling

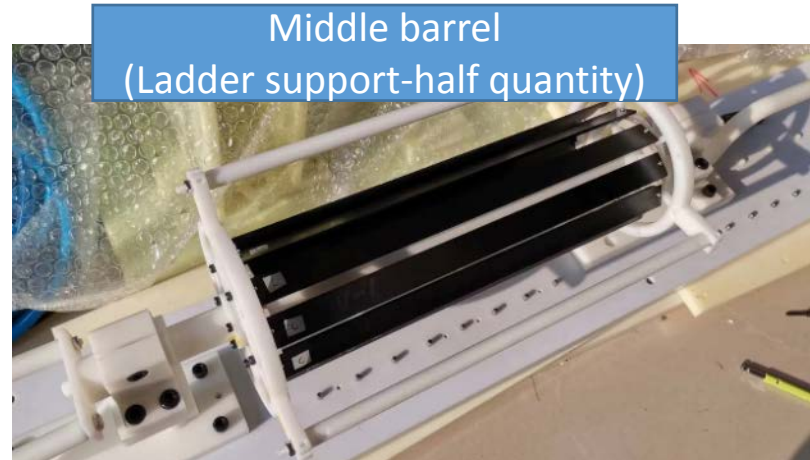
The mockups for the support structure and tooling have been made (by different materials).

Verified:

- Operation space of ladder installation on the tooling
- Tooling assembly process
- Barrels assembly process



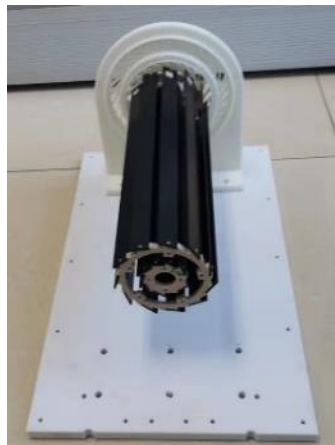
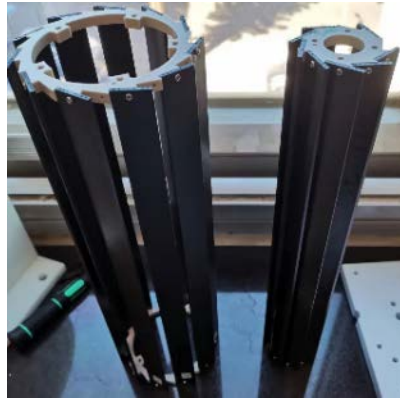
Inner barrel



Middle barrel
(Ladder support-half quantity)

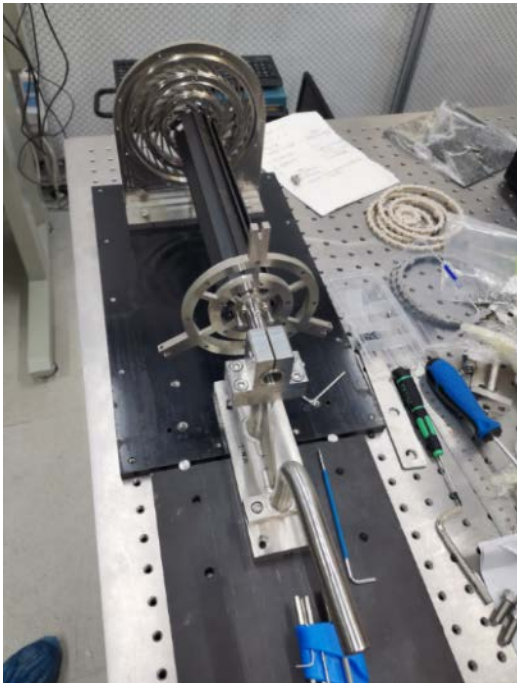
Mockup - Barrels on the main brackets

The installation of the barrels on the main support brackets were demonstrated.

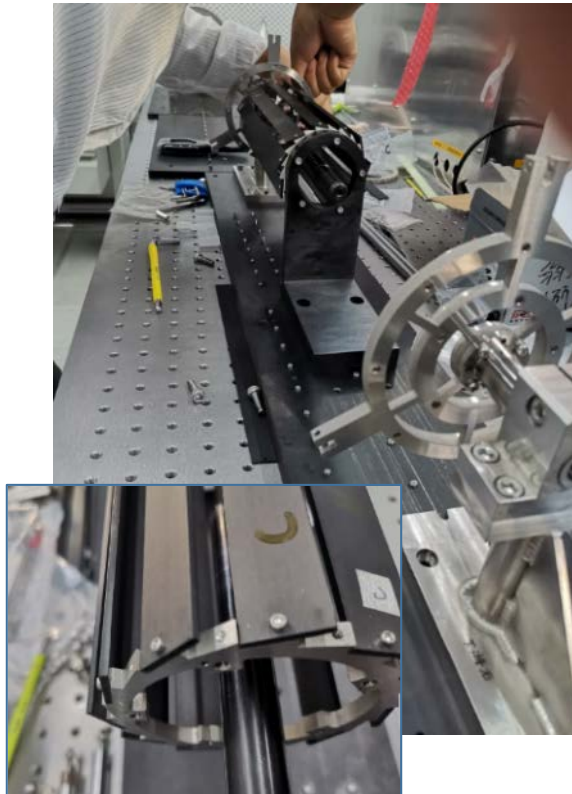


Barrels assembly

Inner barrel



Middle barrel
(half number of ladders)

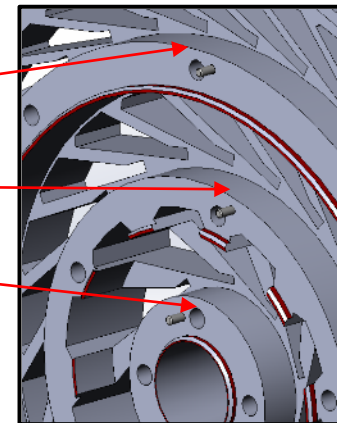
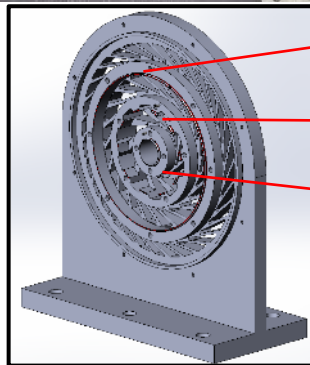
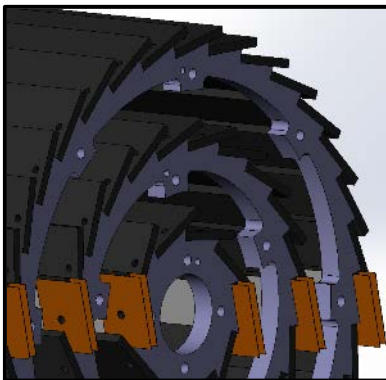
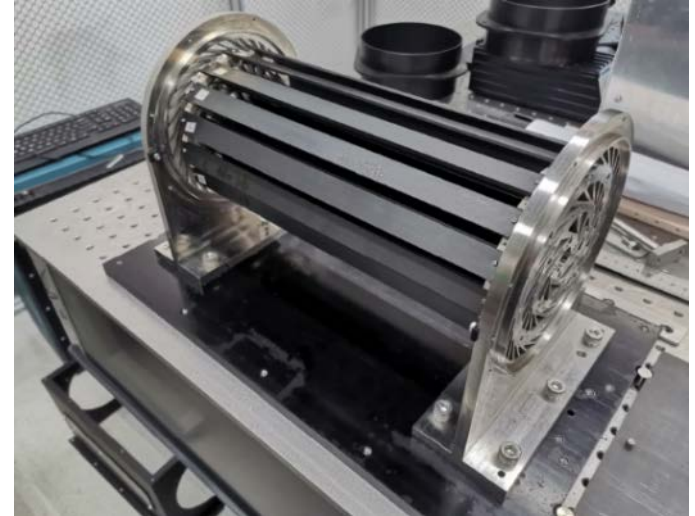
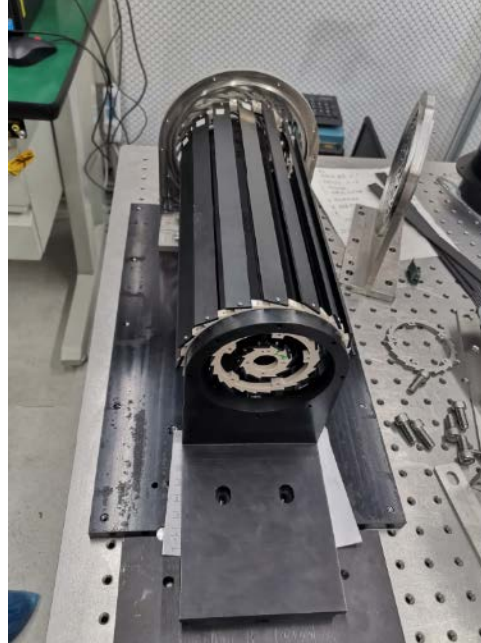


Outer barrel
(half number of ladders)

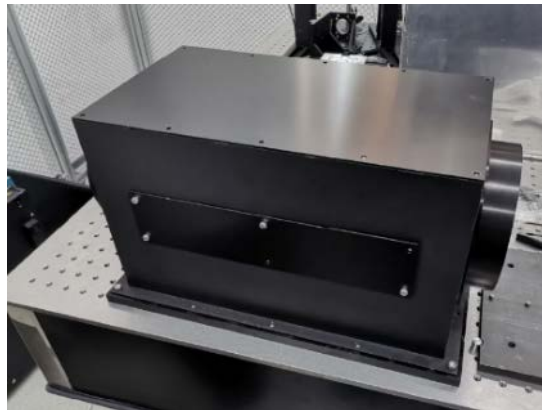
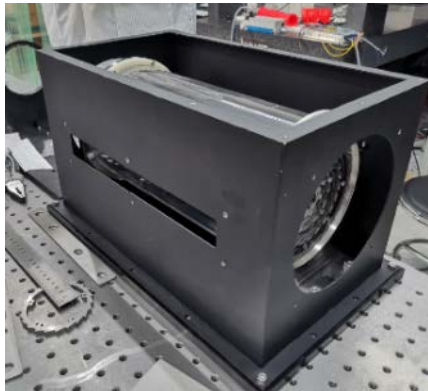
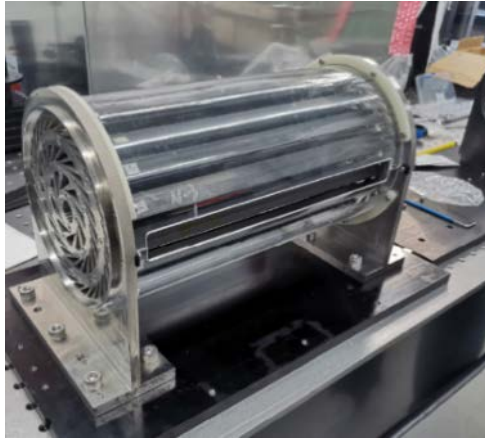


Barrels installation on the main brackets

The installation of the real parts was very smooth, all three barrels can fit to the main bracket well.



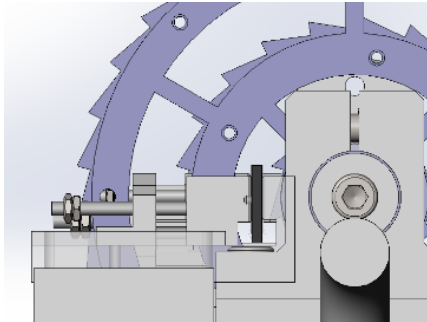
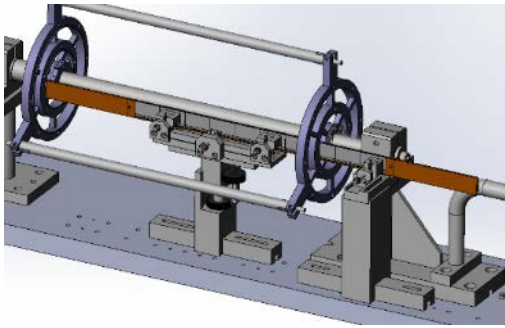
Assembly of the main structure of the VTX prototype



The auxiliary jigs for ladder installation

Two assemblies were designed for ladder installation on barrel.

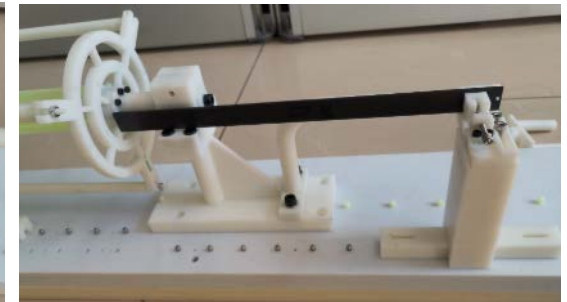
(Allow ladders to move in 3 axial directions and rotate along the longitudinal direction)



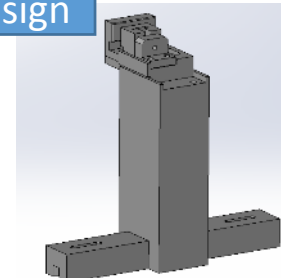
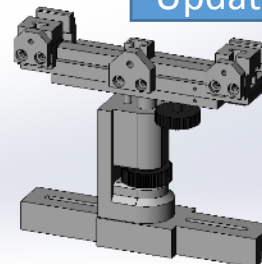
Parts of the mockups V1



Trial use of the mockup V1



Updated design



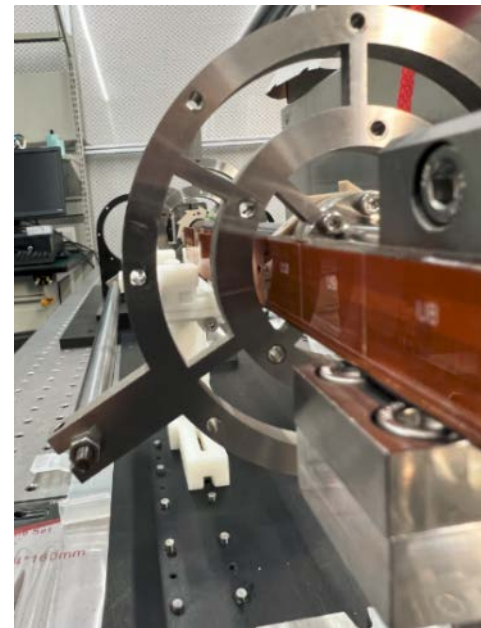
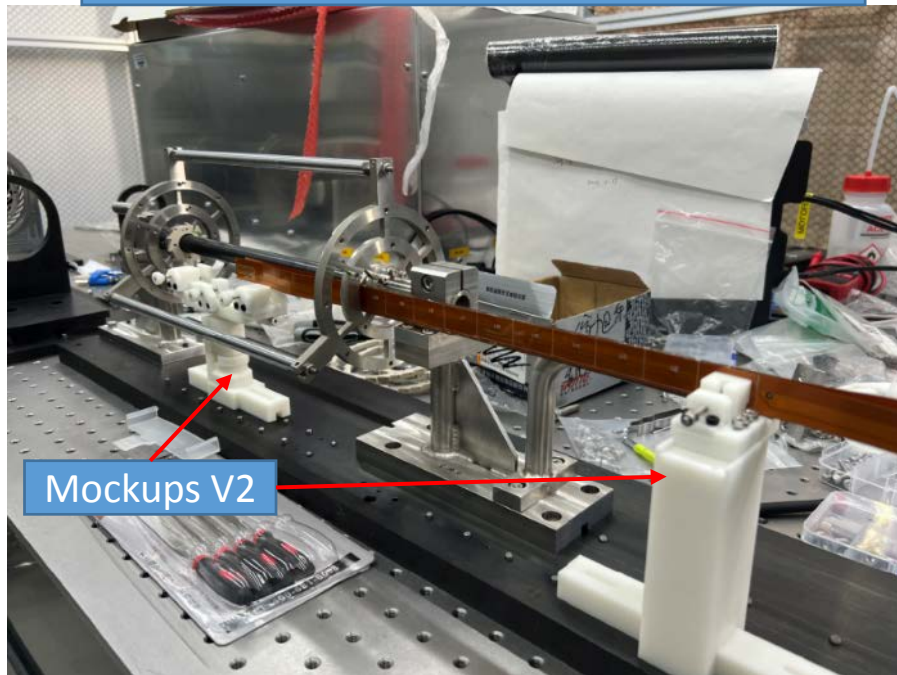
To make the ladder move more stable also with higher adjusting space, slightly optimized the design.

Ladder installation test

The dummy ladder installation on barrels was tried by using the updated tooling assemblies made by 3D printed (mockup V2):

- the fixture and jigs work well
- the procedure and space for operation were proved feasible.

Ladder installed on the inner barrel



Ladder installation test

Ladder installed on middle barrel



Ladder installed on outer barrel
(no need of tooling)

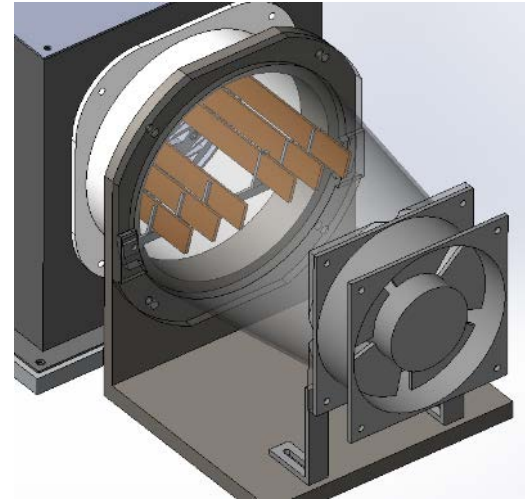
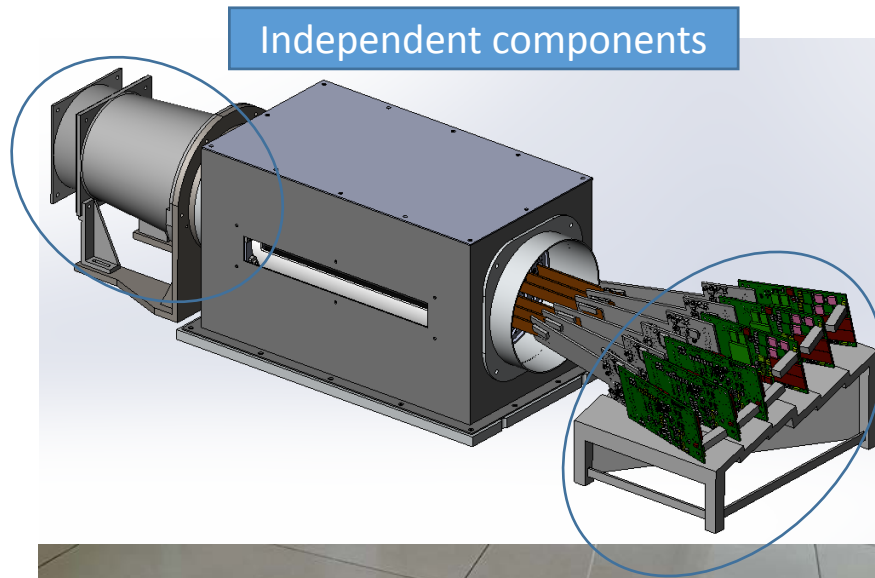


Formal parts

The formal parts of the auxiliary jigs have arrived and are being assembled with the clamping parts.



Support structure design of the cooling ventilation and outside electronics



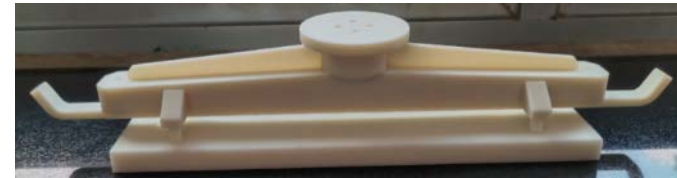
The structure of cooling is done, that of electronics will be available quite soon.

Tooling design for ladder assembly on the gantry

Sensor pickup tool



Module pickup tool and support



Vacuum chuck for sensors array



Module fixation and protection components - samples



Thanks