



IJCLab Team :

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iVTX air cooling Ijclab activities May 2023

- **KEK visit**
- **Thermal test bench**



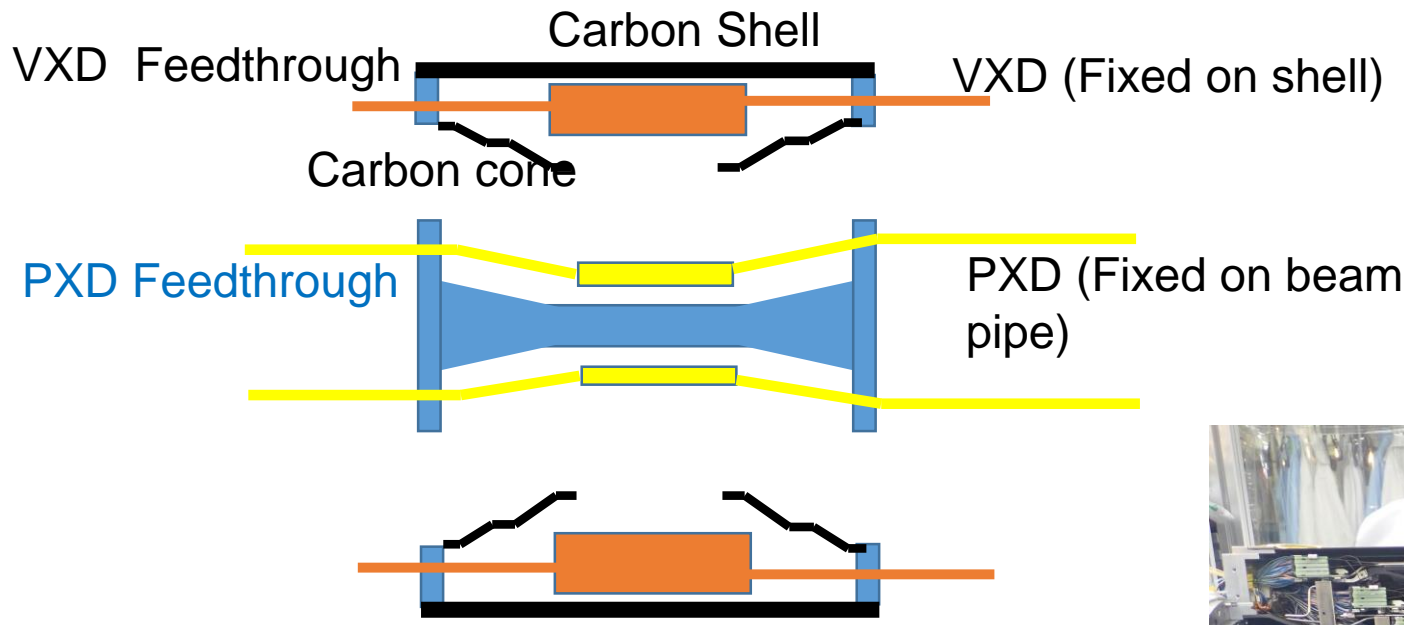
KEK visite during SVD extraction and SVD opening (5 to 17 may 2023).



Knowledge of the geometry of the detector, its mechanics and assembly methods:
The assembly induces strong constraints on the possibilities of passage of the services.
The available space is restricted.
Having an idea of what is modifiable and what is not (our field of action).

Nota : The mechanics of the PXD and also the VXD are strongly linked to those of the beam pipe
(A procedure that has been established and successfully implemented for years by KEK).





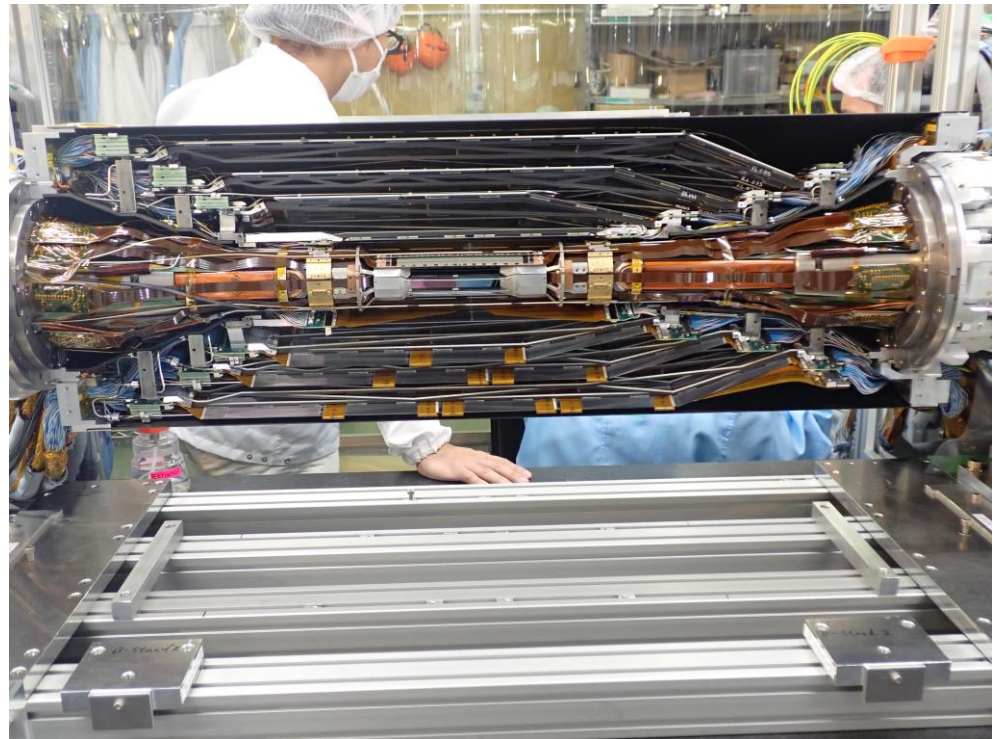
No connection possible between VXD and PXD services.

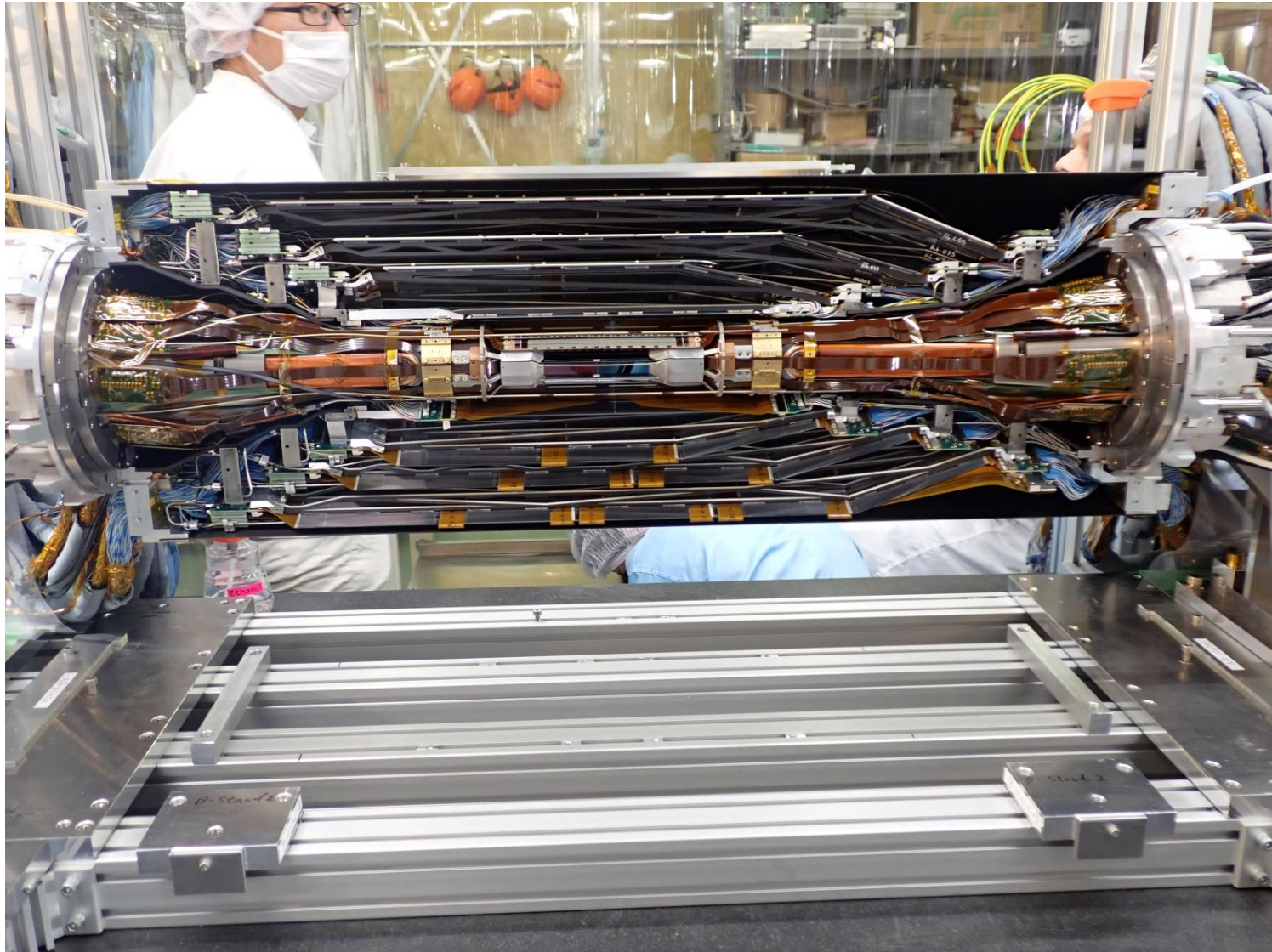


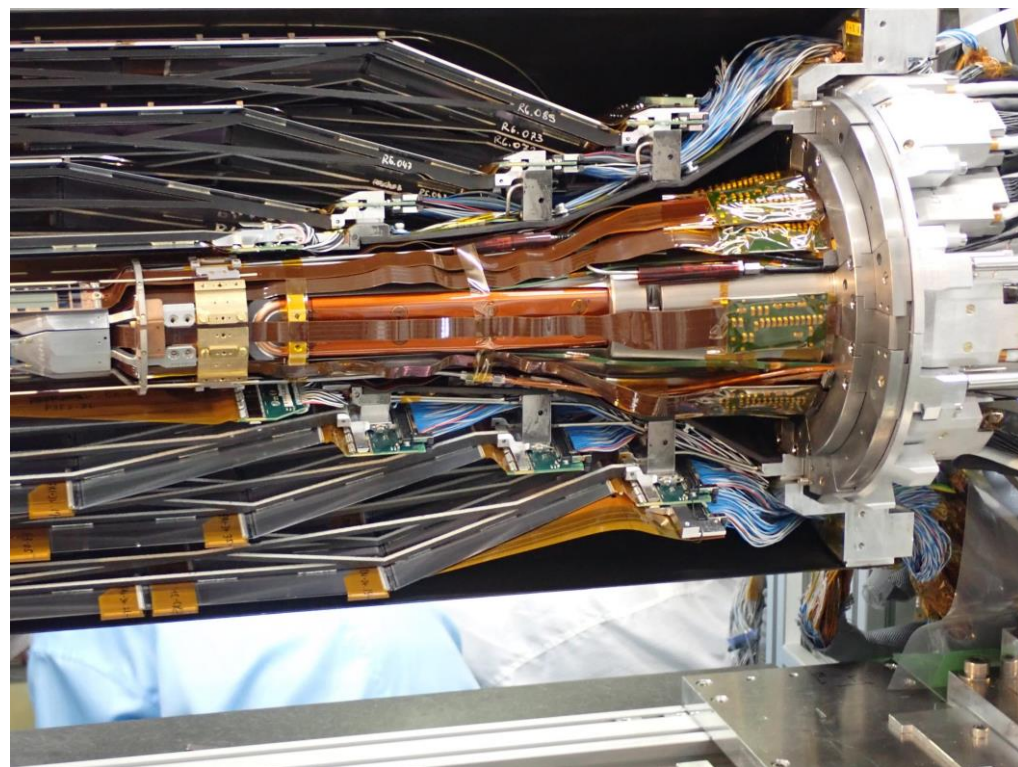
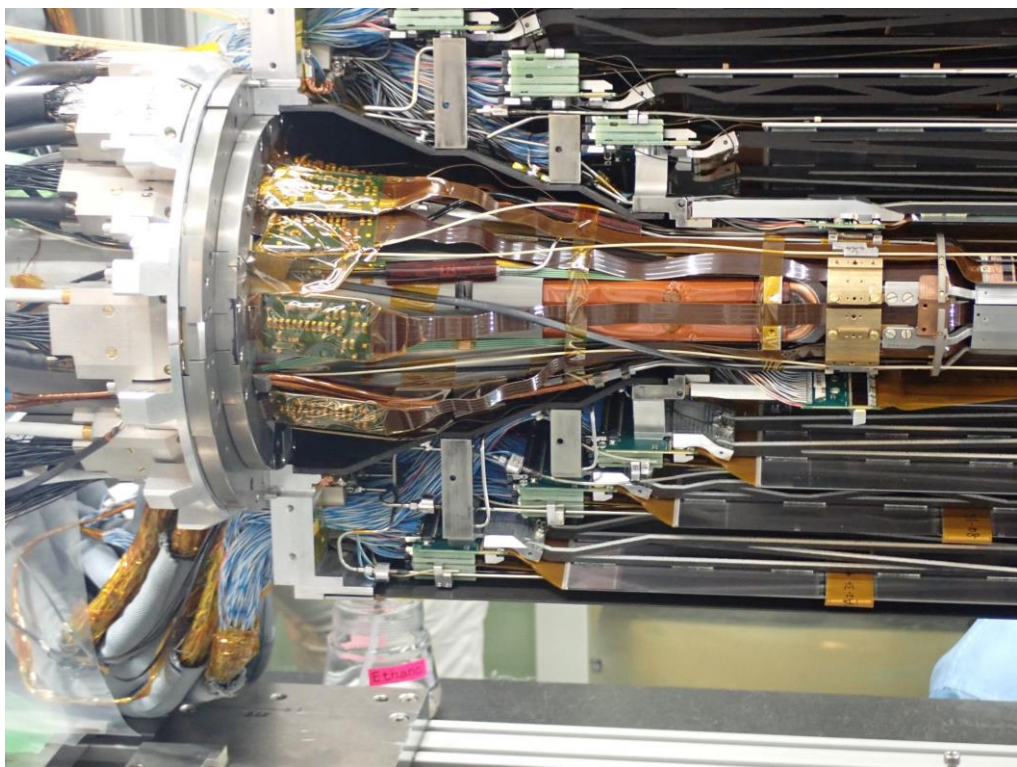
The cooling air must pass between the carbone cone and the tungsten shield and use PXD feedthroughs.

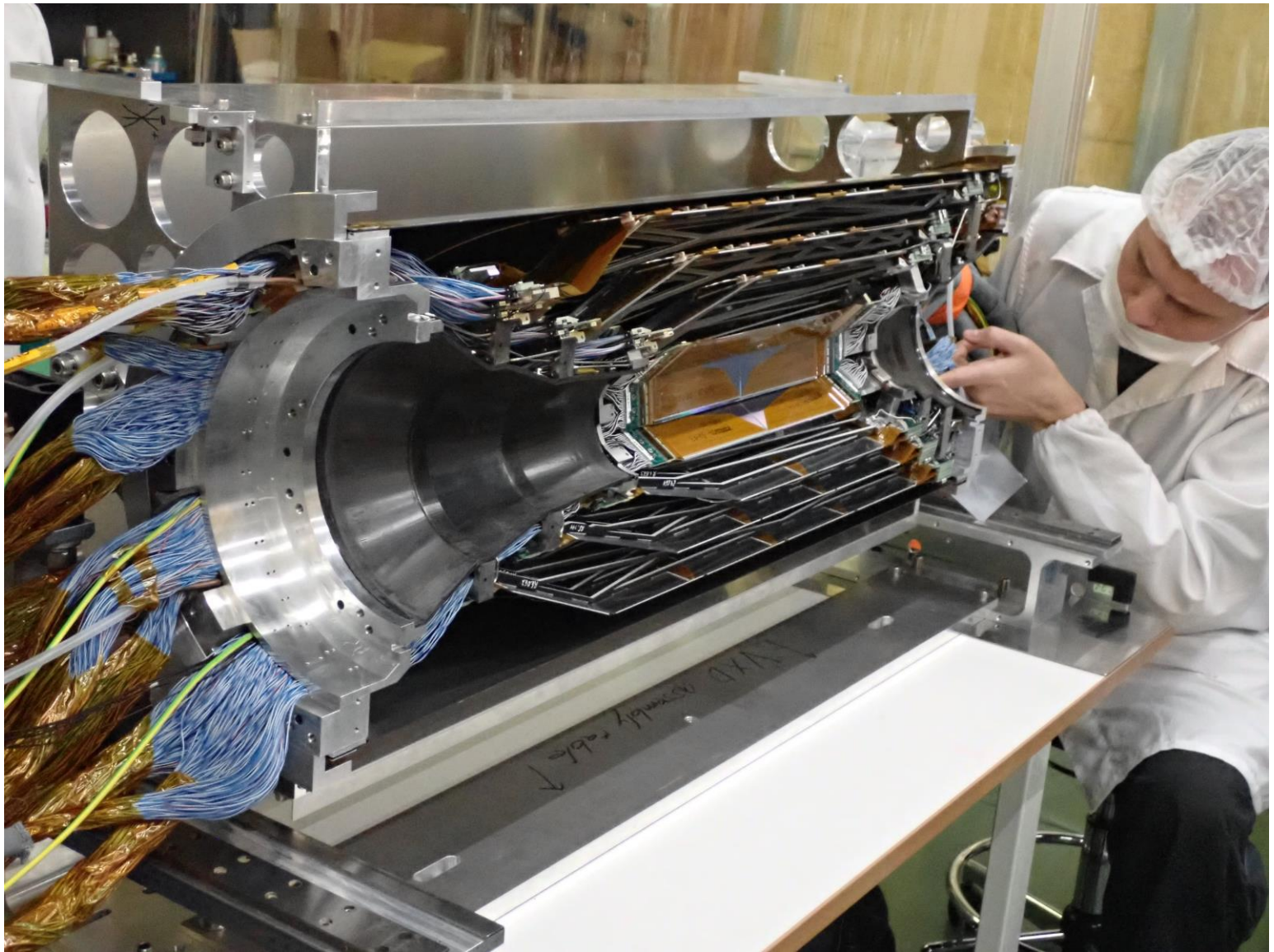


Necessary modification of the carbon cones.







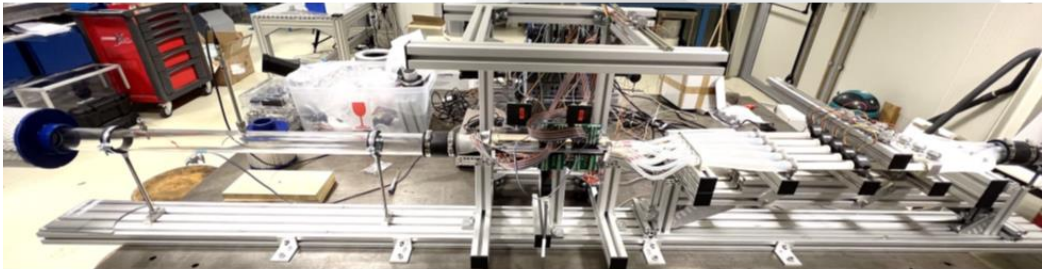
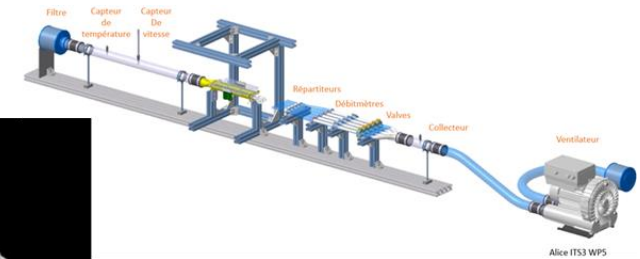


*Thermal fluid calculations are less reliable than mechanical calculations.
It is necessary to carry out real tests.*

Our objectives are:

1. Demonstrate the efficiency of the iVTX air cooling system.
2. Airflow management : Experiment with an air inlet that is compact enough to pass under a carbon cone, which means for extraction....

A very interesting discussion with Aitor Amatriain Carballo, an Aerothermal Engineer working on the ITS-3 cooling in the team of Corrado Gargiulo at CERN. They have an air cooling test bench similar to what we want to do.



A mechanical design student (Hassan Sanoko) has been working on the project since May 15, 2023, and we have largely defined the specifications of the necessary materials.

