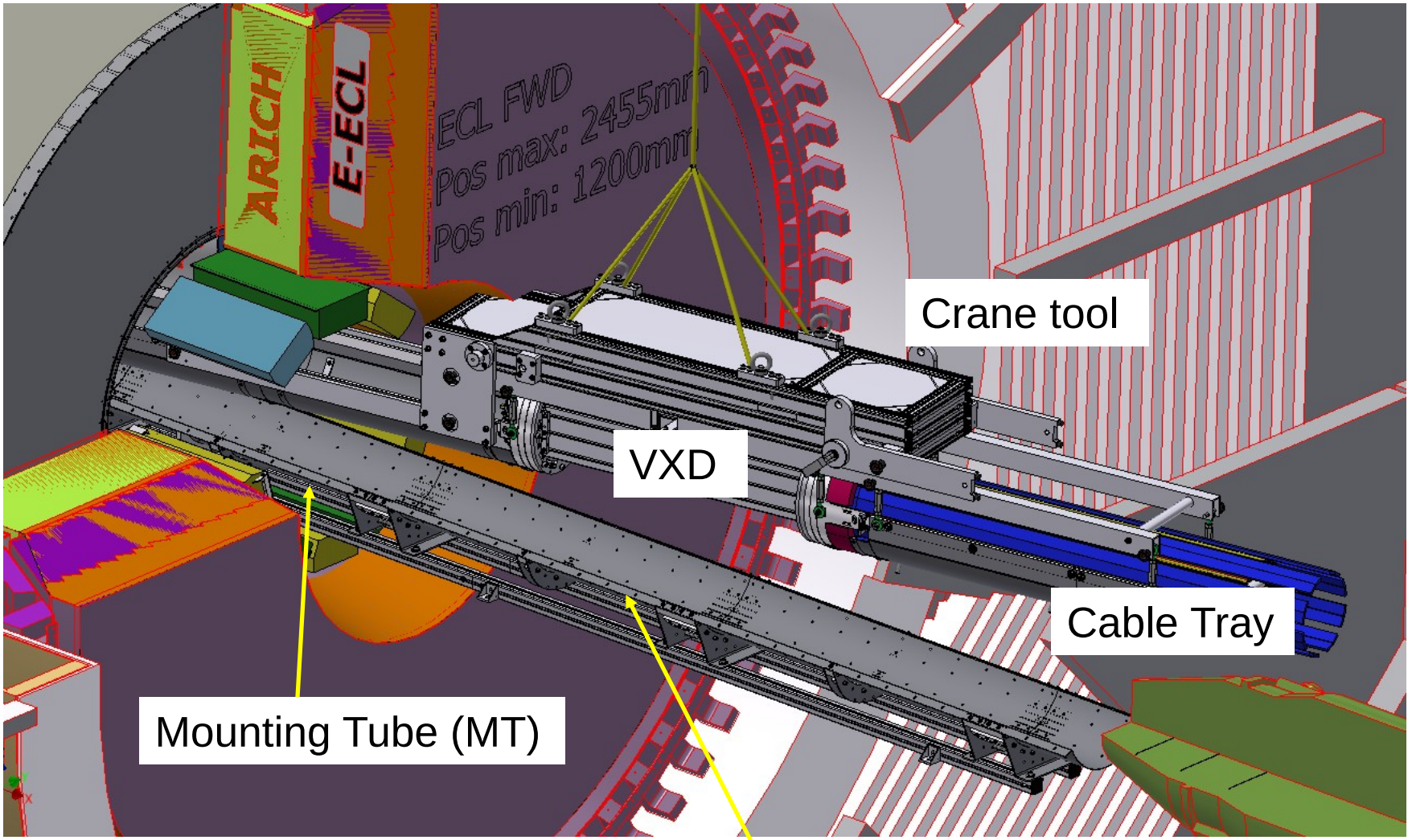
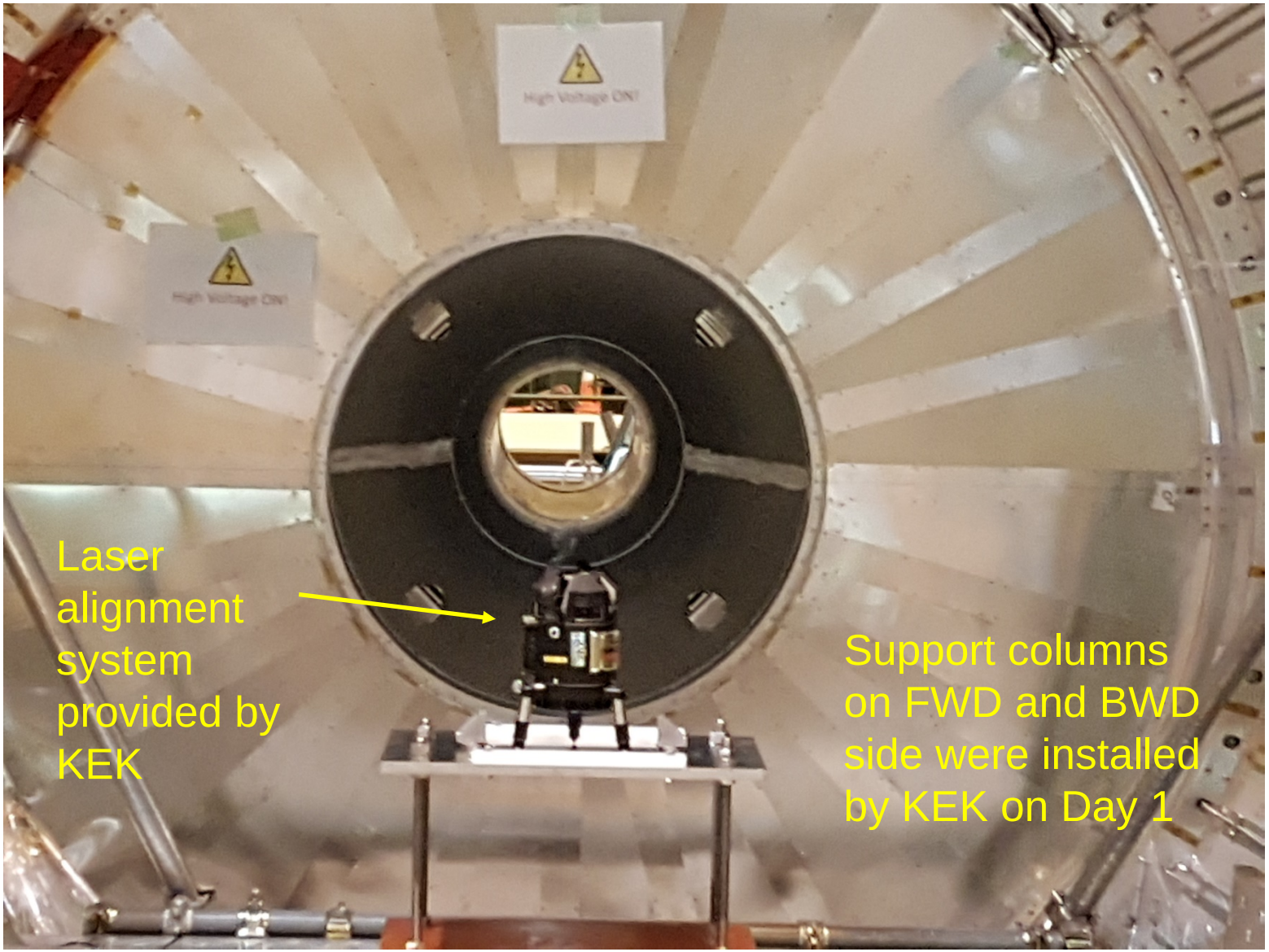
Recent and Coming PXD Activities at KEK

1. VXD Test Installation in Tsukuba Hall
2. Installation of IBBelle
3. Installation of the CO2 Flexlines
4. Plans for the Roll-In and thereafter

1. VXD Test Installation



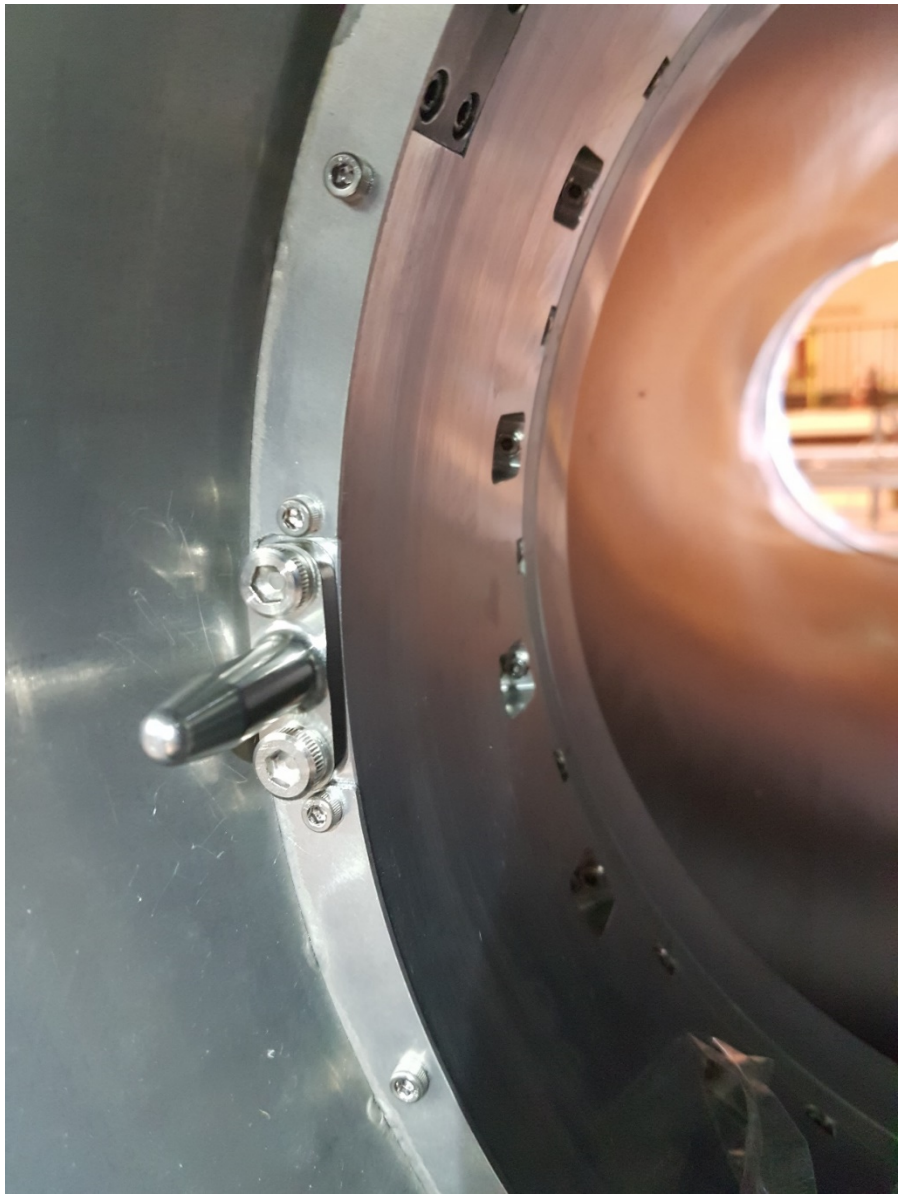
Alignment of Support Columns



Installation Ready for Move-In

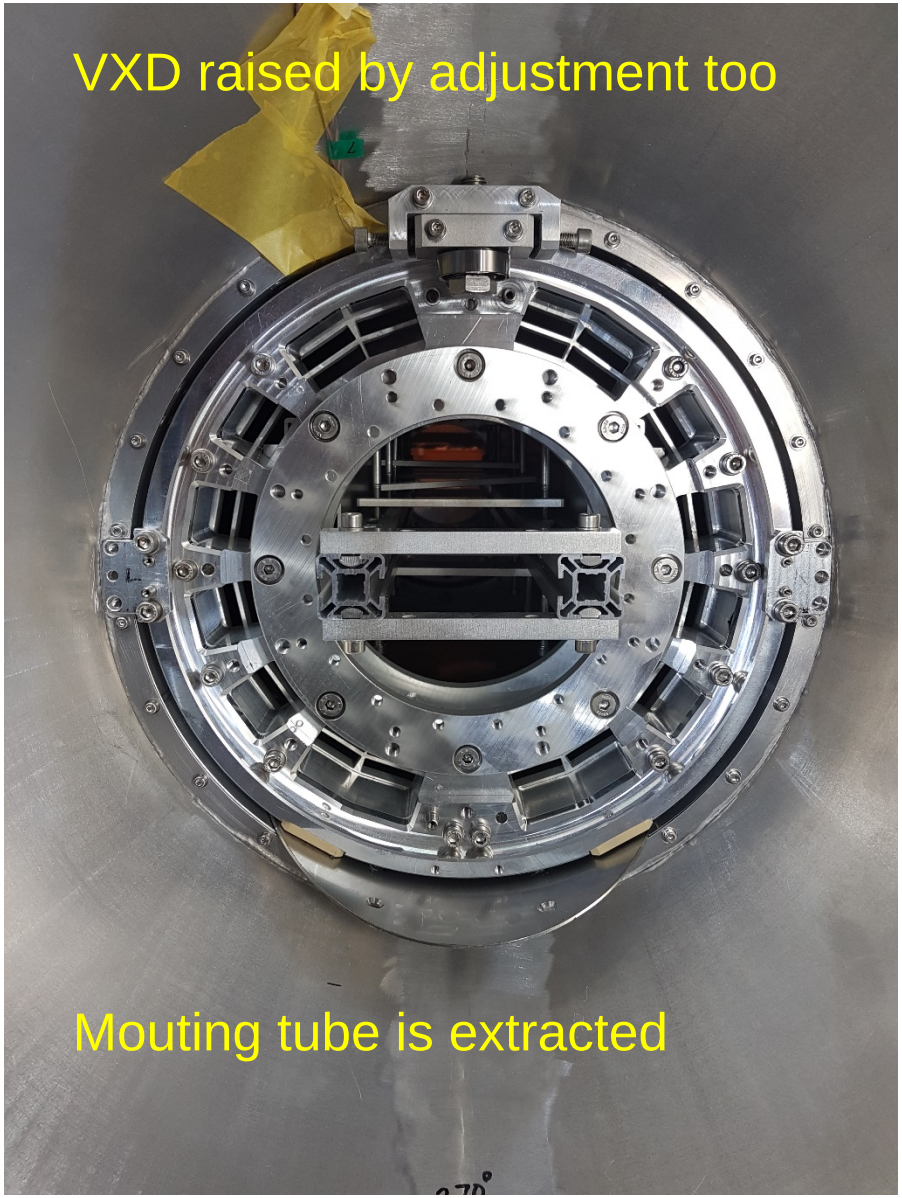
add FWD cable tray: ready to move in

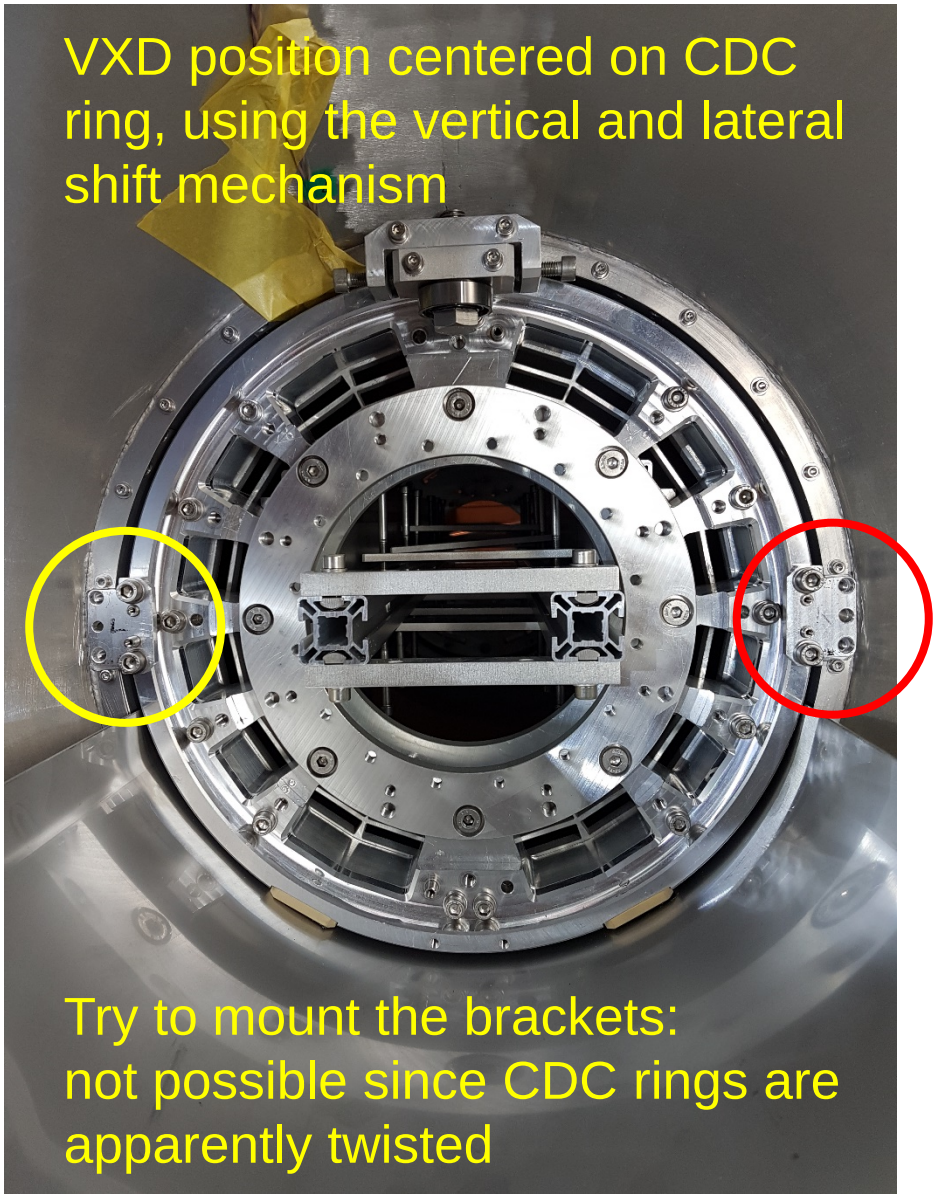
Installation of Pins on FWD



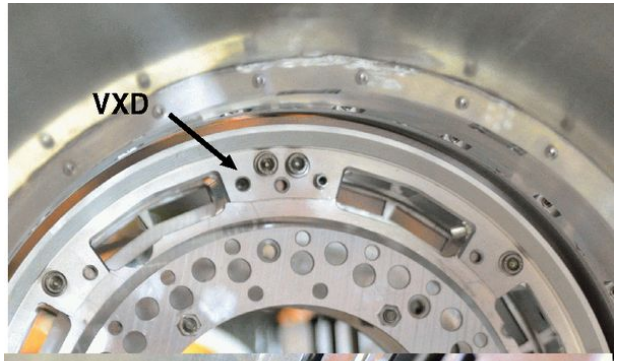
Pin installation on left side OK,
Problems on the right side

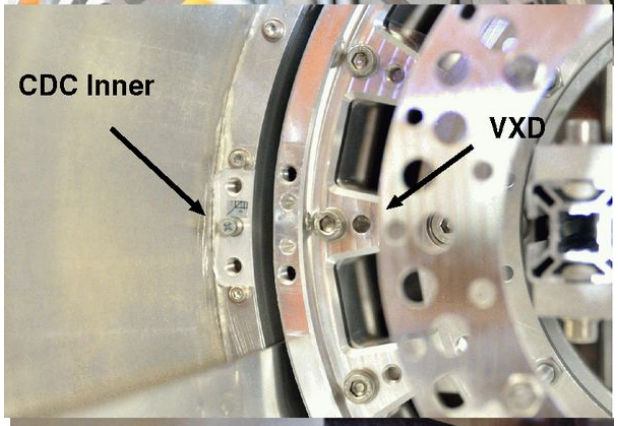
Aligning and Fixing of VXD on BWD

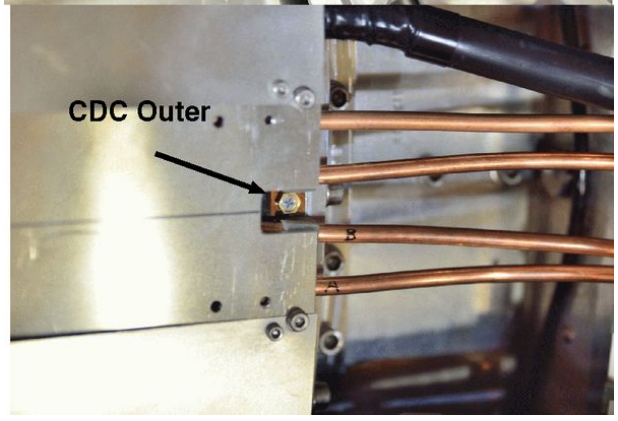




Measure CDC & VXD Rings



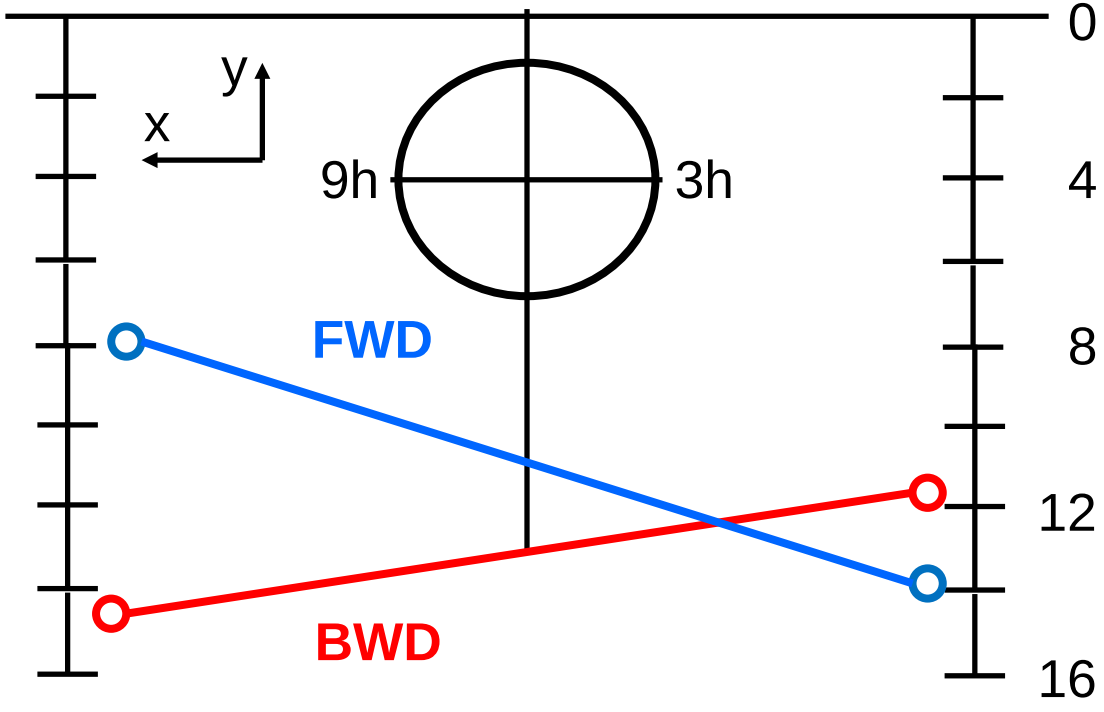




Isamu Nakamura took the measurements
BWD and FWD

BWD CDC Inner
3h -0.16314 -0.00118
9h 0.16877 -0.00146

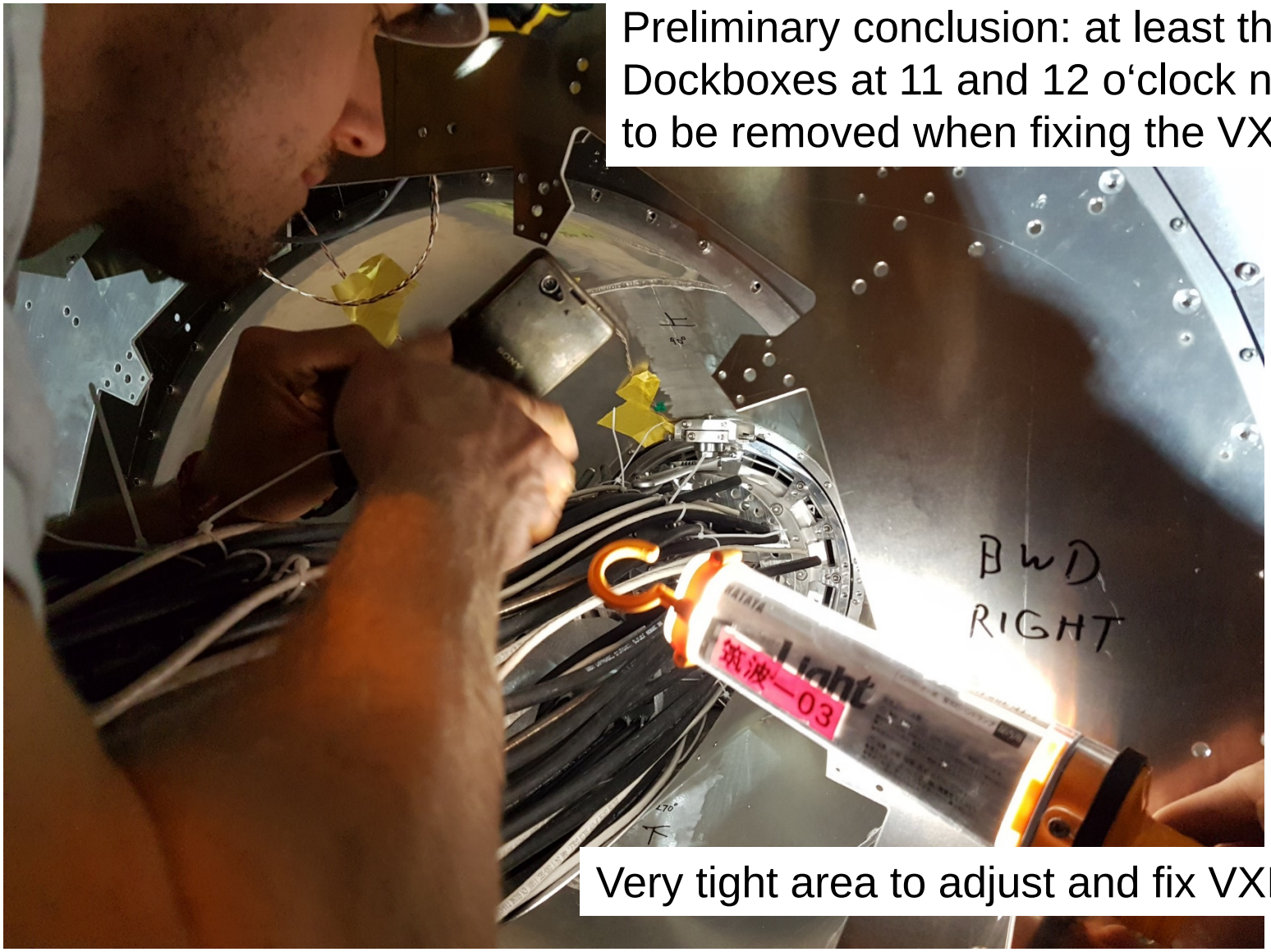
FWD CDC Inner
3h 0.16653 -0.00077
9h -0.16489 -0.00138



-> Fixtures need modification

10^{-1} mm

VXD Mockup with Cables …



Preliminary conclusion: at least the Dockboxes at 11 and 12 o‘clock need to be removed when fixing the VXD

Very tight area to adjust and fix VXD

Summary / Conclusion of Installation

VXD Test installation very important, went very smoothly
Lessions learned:

- BWD cable tray need slight modification (radius too big)
- Another Mounting tube will be fabricated (improved roundness)

- Problem with Sheet metal cylinder of the CDC in FWD
- Several problems with the sheet metal cylinder in BWD (will need machining) -> EDI test was not possible
- CDC inner rings are rotated relative to each other: needs careful redesign of the receiving holes on the FWD side and needs specially manufactured brackets for the BWD fixation. Agreement with Kohriki-san: MPI compensates for FWD rotation via the pin holes in the VXD installation ring
  KEK machines the BWD sheet metal cover and prepares the BWD fixations at 0° and 180°

Next chance to get EVERYTHING right: B-field measurement robot

IBBelle Installation

IBBelle installed in Tsukuba Hall, B1 Level

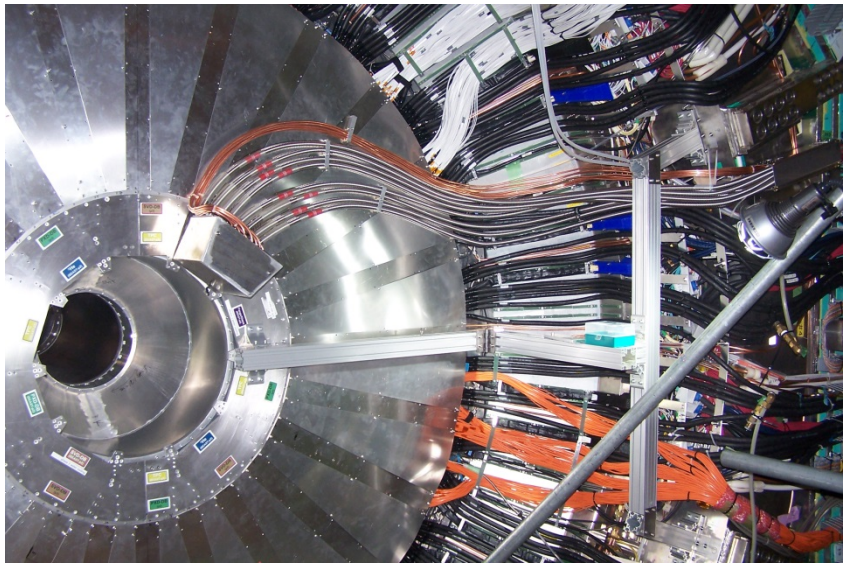
Arrival: Oct. 20

Junction Box and Manifolds installed (Oct. 28)

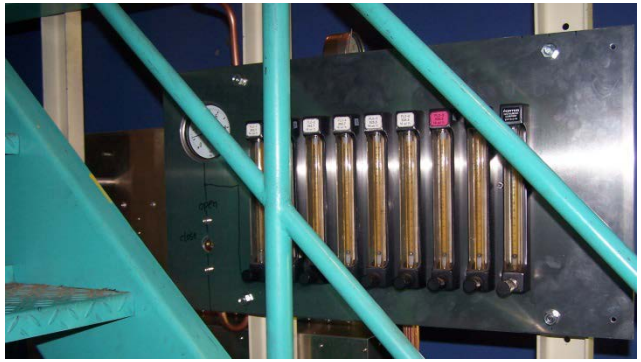
- First cold operation successful
- CO_2 circulated up to junction box (40m downstream from IBBelle)
- **IBBelle is able to cool >2500 W @ -30°C (required: 1100 W)**

Installation Work

Dock Boxes, Flex Lines and N_2 manifolds installed by DESY Team (K. Gadow) December 12-16

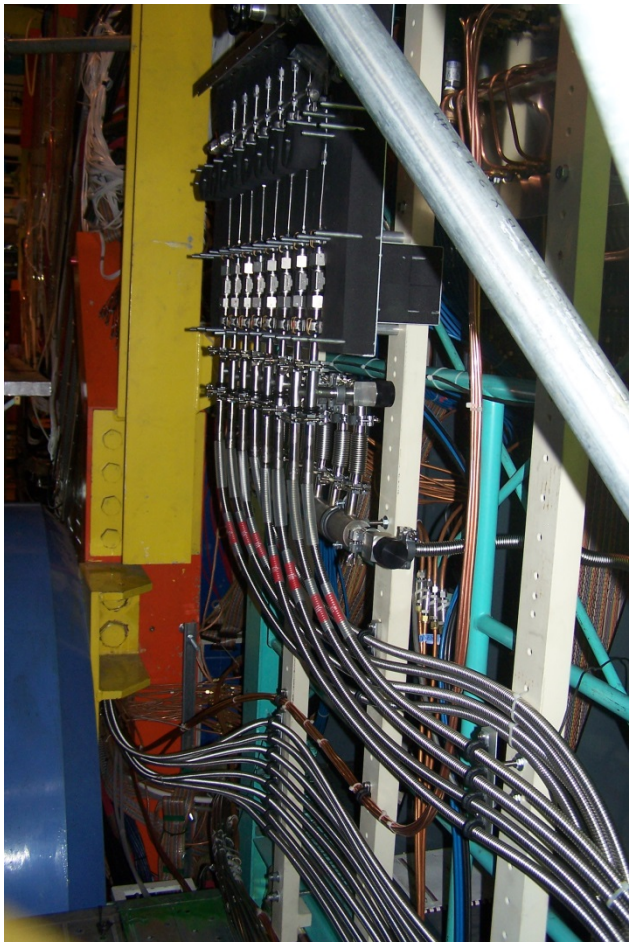


Dock box and flex lines (BWD)



N_2 manifold (FWD)

Lines were pressure tested Insulation tubes under vacuum



CO2 manifold (BWD)

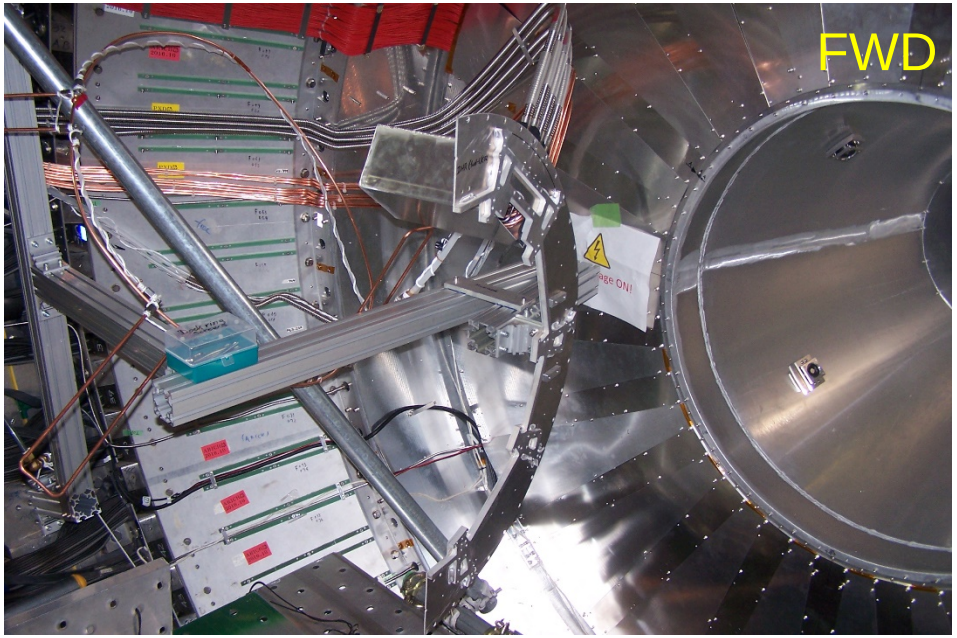
Repositioning for Access to CDC

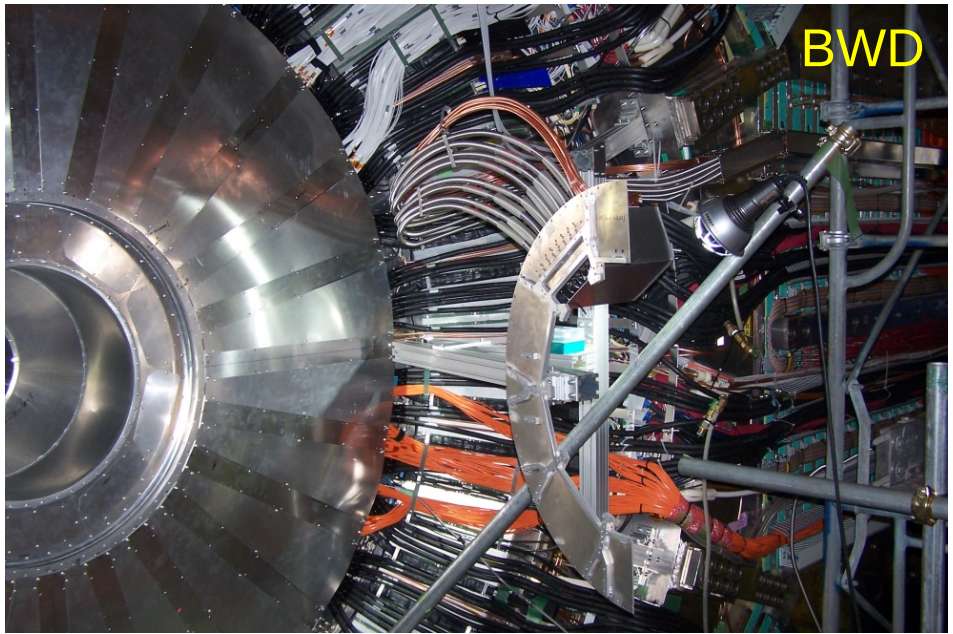
CDC has problems with the cooling scheme for the FPGAs. Repair planned to be finished by Jan. 10.

In order to allow access to the CDC for repair dock boxes and flex lines can be removed temporarily.

Same repositioning on FWD, since several CDC HV lines not operational.

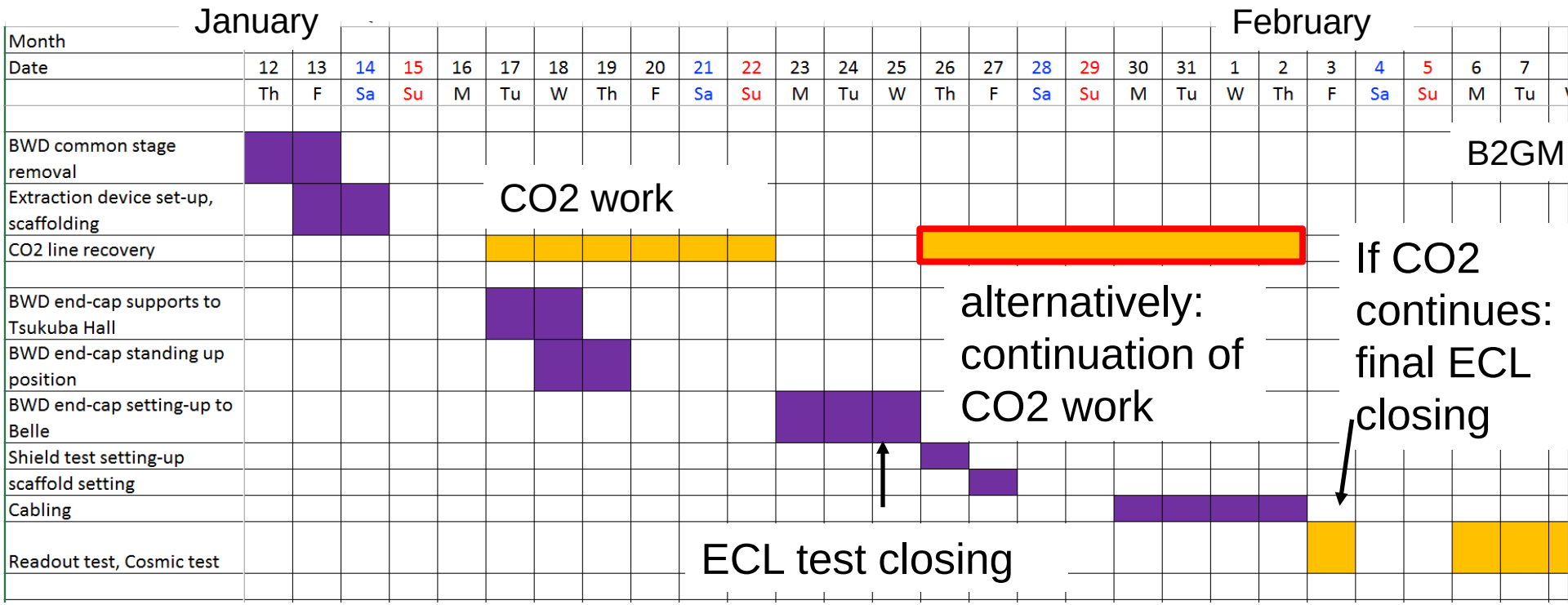
Before ECL installation the CO2 box and the flexlines have to be put back





Next Actions at KEK

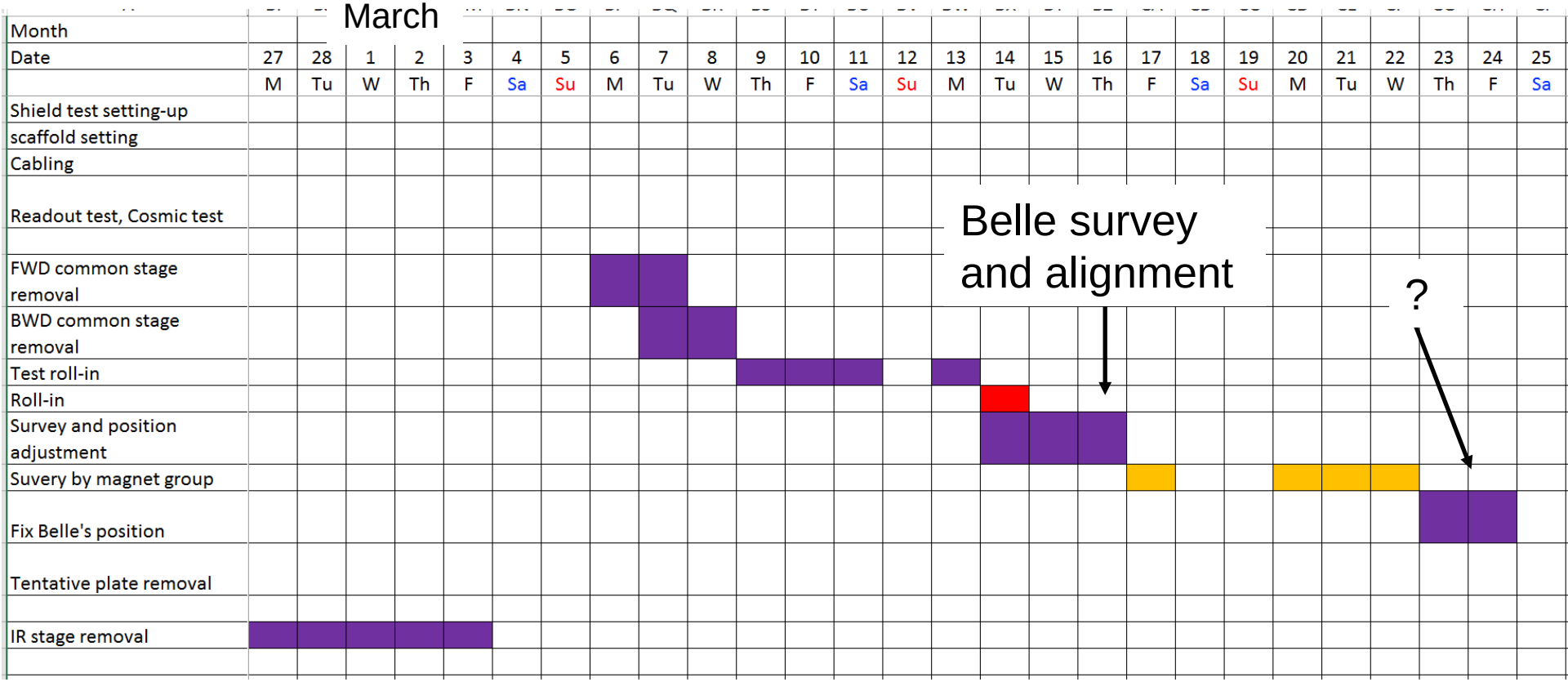
For the preparation of the ECL installation, the CO2 Dock box, the flexlines and N2 pipes, as well as the SVD H2O cooling on BWD needs to be put back into the correct position



In addition, the heaters and NTC sensors for the CO2 lines in the dock box need to be installed -> Jan. 17 – 22 (prod: heaters by MPI, NTC by DESY)
In parallel: connection of manifolds to the junction box
-> first cold test in that week (?)

Next Actions at KEK

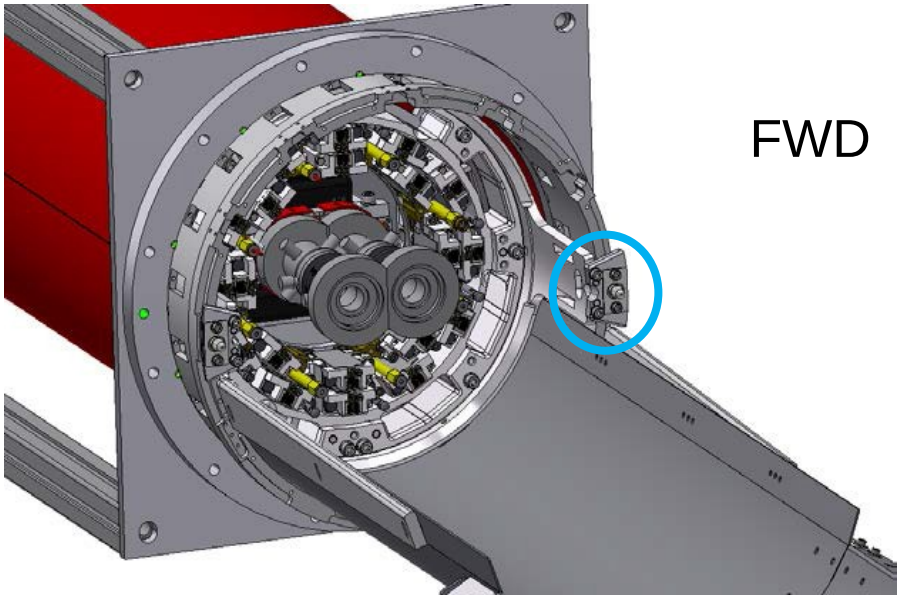
Adjustment of Belle position relative to the machine: critical for the VXD position relative to the QCS (no adjustment possible: fixed at FWD CDC side

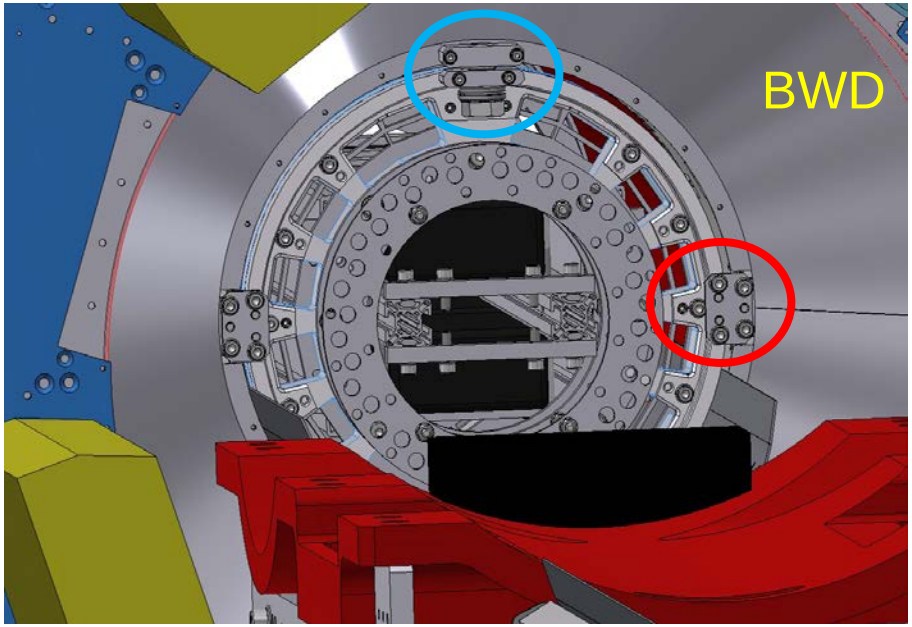


Important action end March / beginning April:
insert Bfield Robot -> Teams from MPI and DESY / Krakow
(no final schedule yet)

Backup

Principle of VXD Support in CDC

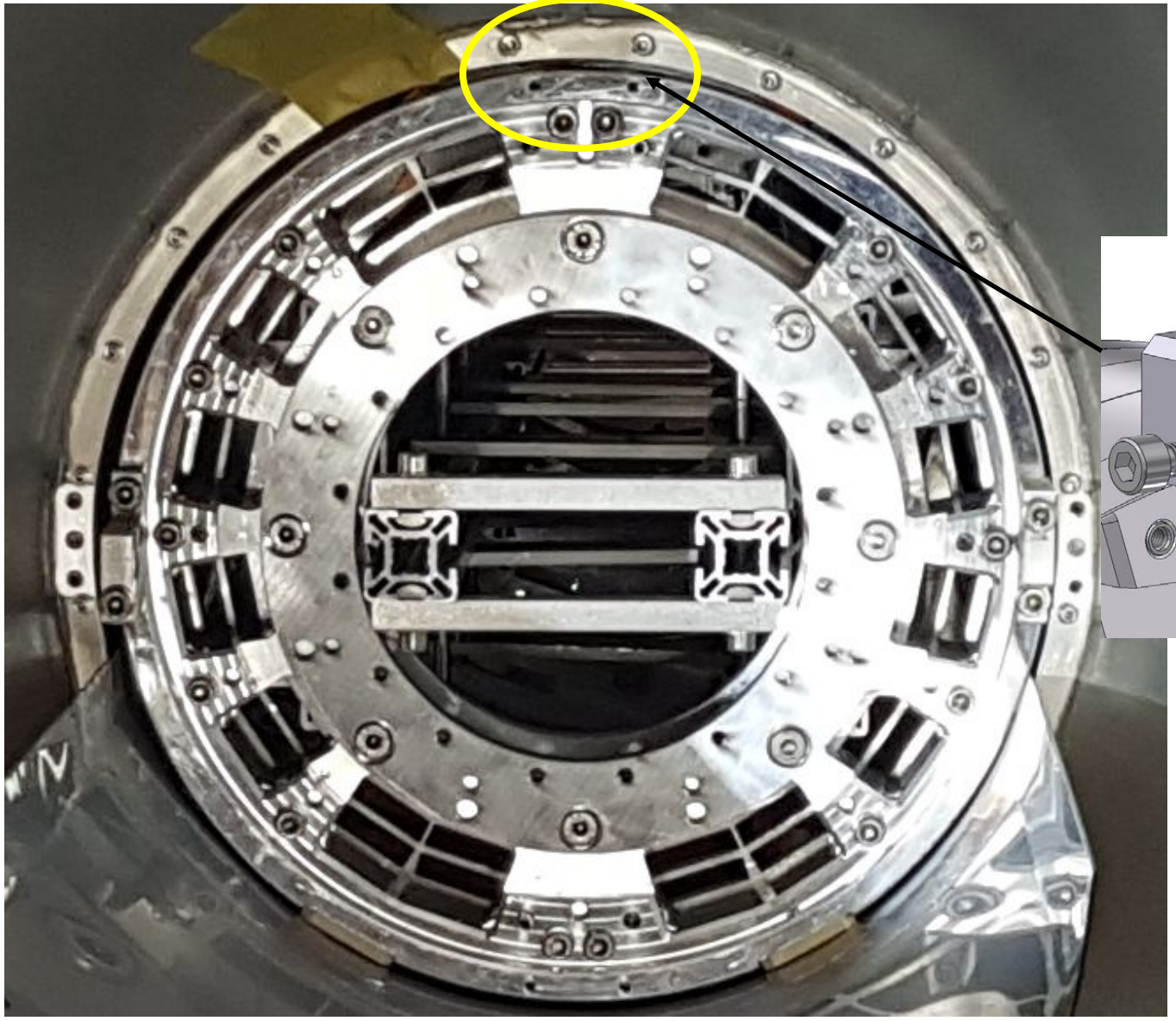


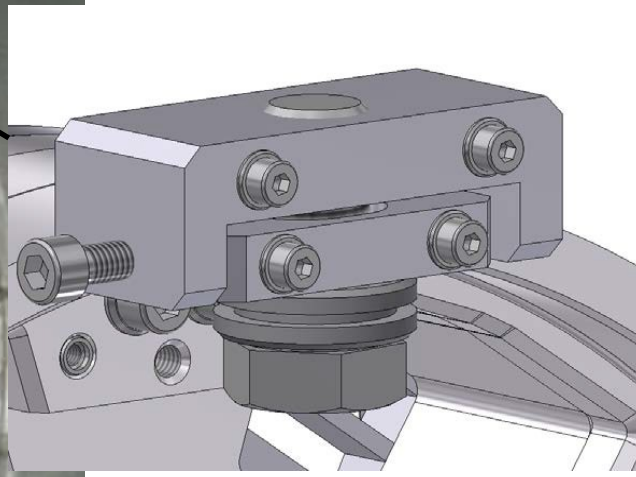


FWD: VXD is fixed by pins in azimuth, can slide in z (CTE)

BWD: VXD is adjusted in height and lateral position by aligning to one pin (right), finally fixed by two brackets at 0° and 180°

Aligning and Fixing of VXD on BWD



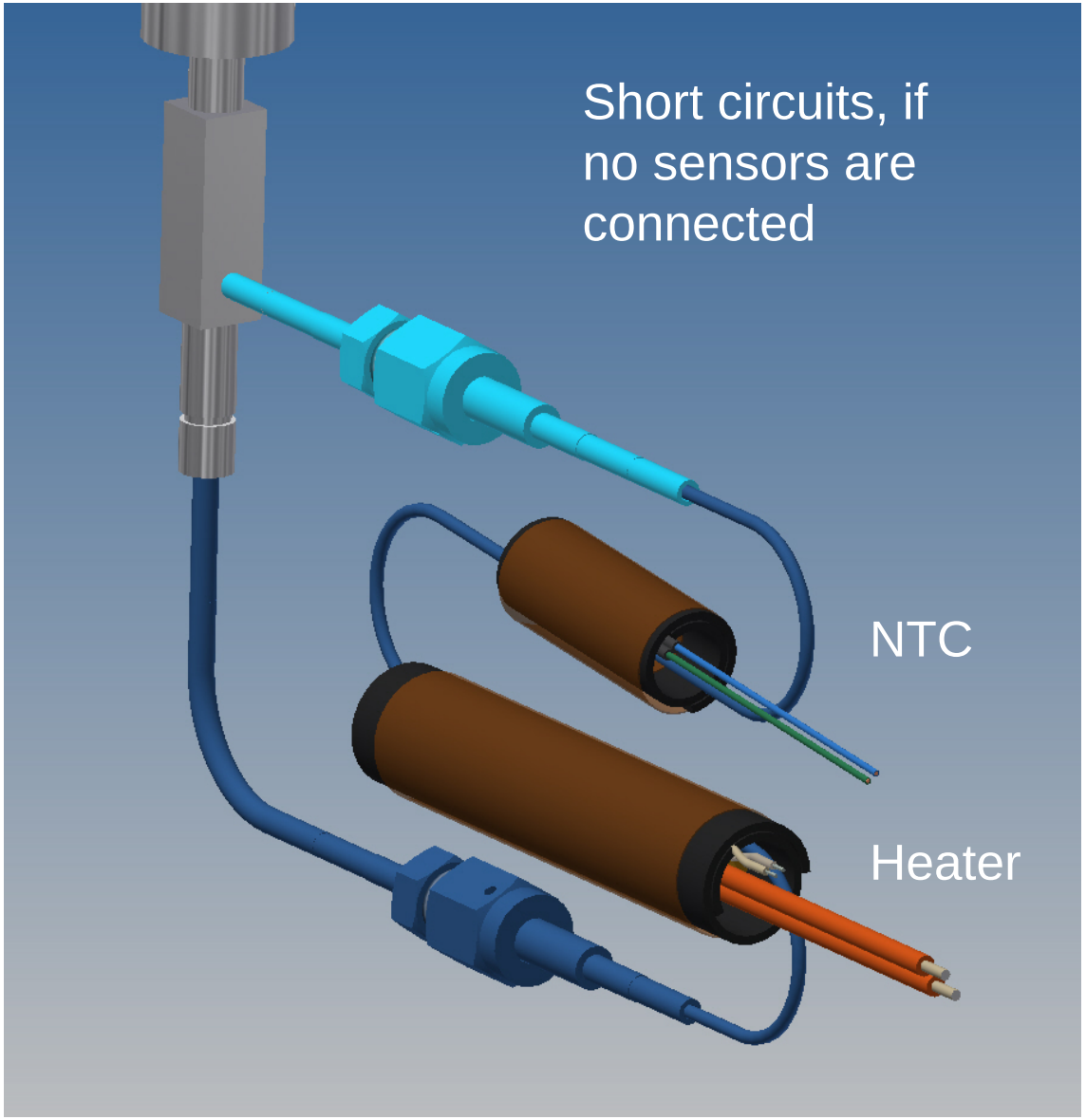


Next step:
adjust height and lateral position with our tool

VXD is supported at this point only on top of CDC ring (yellow circle)

FEM calculation:
sag of ring by 40 µm at full weight

Layout of the Heaters and NTCs



Heaters are installed for commissioning to simulate the thernal load of the various modules (PXD and SVD)

For the BEAST operation they are also essential (only a few CO2 lines of the SVD connected)

For Phase 3: with the heaters we can fine tune and balance the heat load on each CO2 line

Additional cables no problem (from dock to the outside)