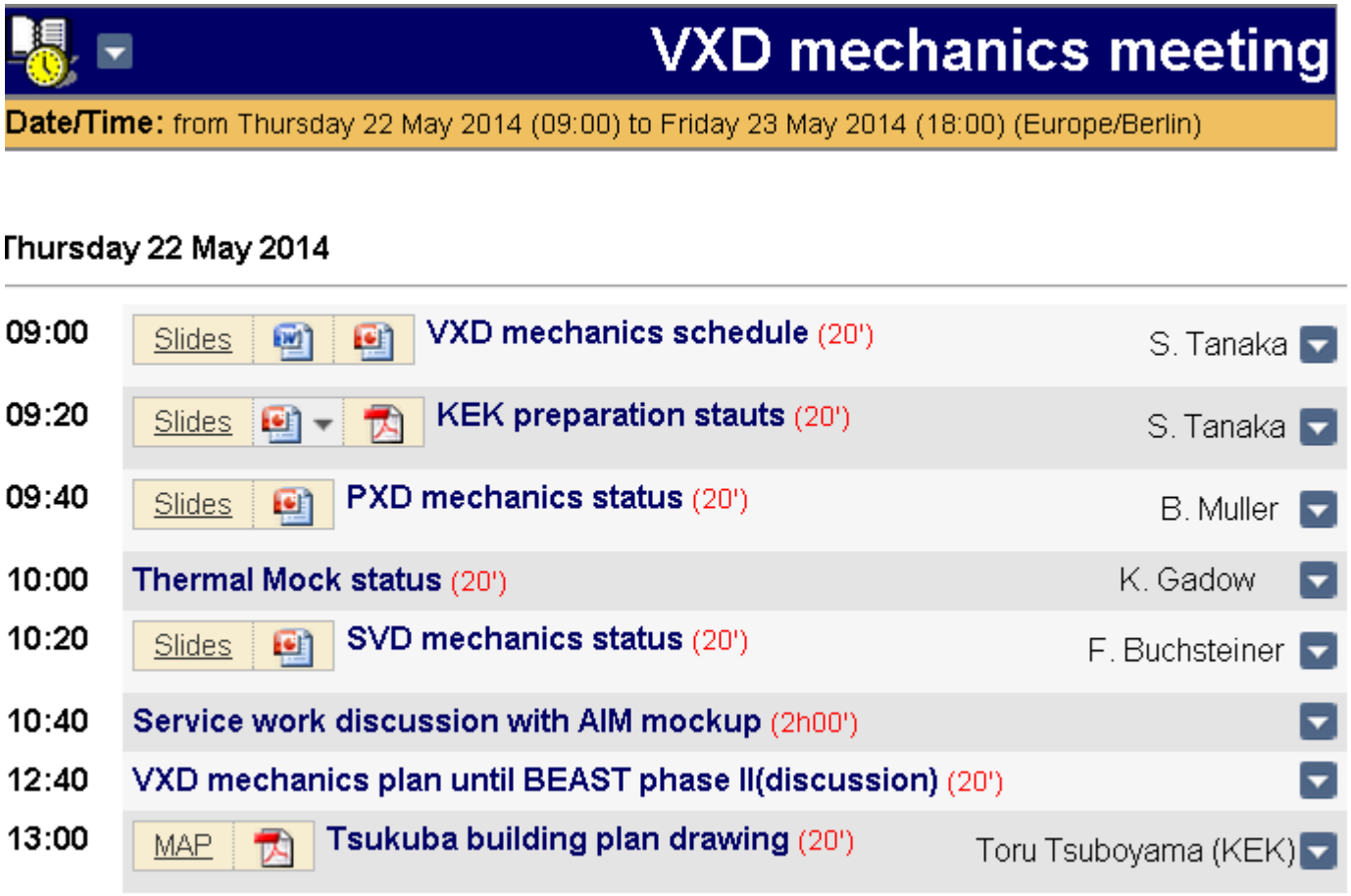
Update on status of IR mechanics

S. Tanaka

KEK



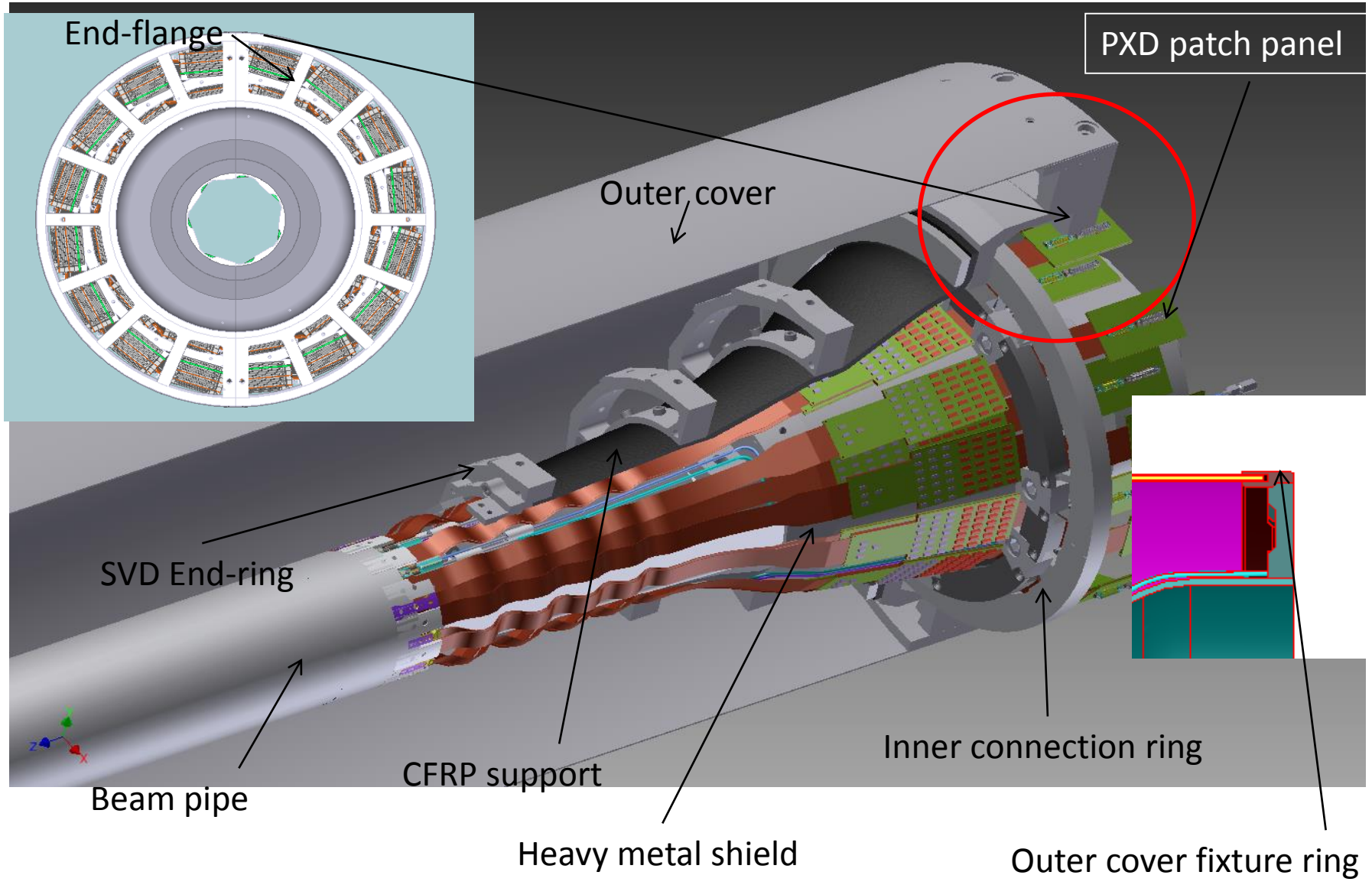
VXD mechanics meeting

Date/Time: from Thursday 22 May 2014 (09:00) to Friday 23 May 2014 (18:00) (Europe/Berlin)

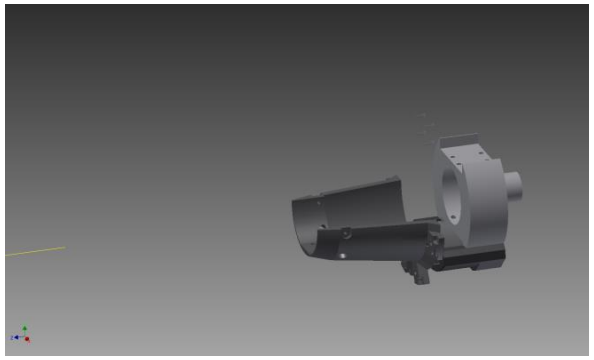
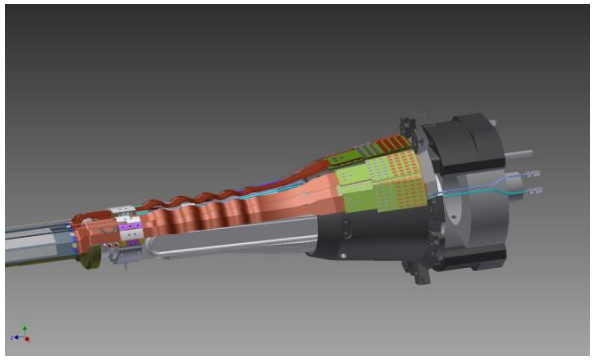
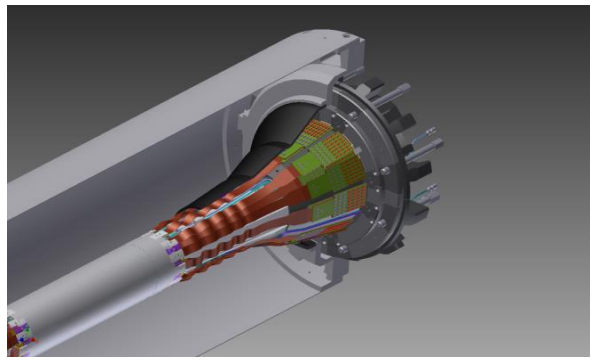
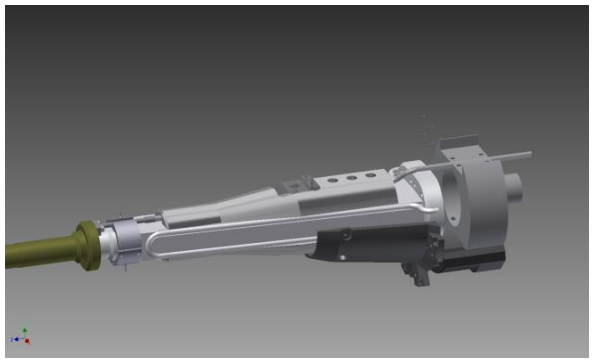
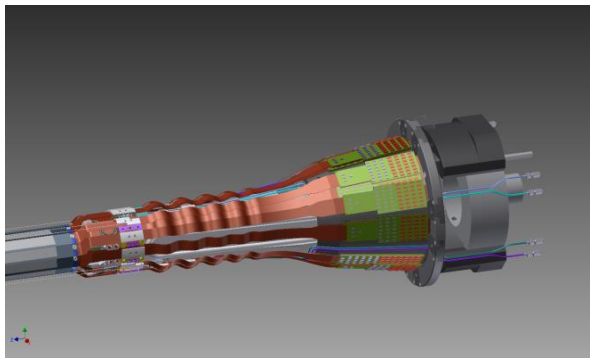
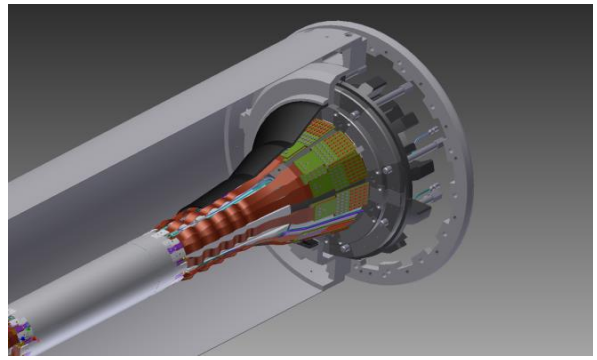
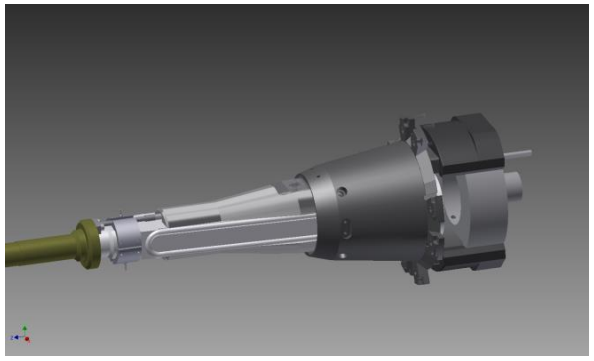
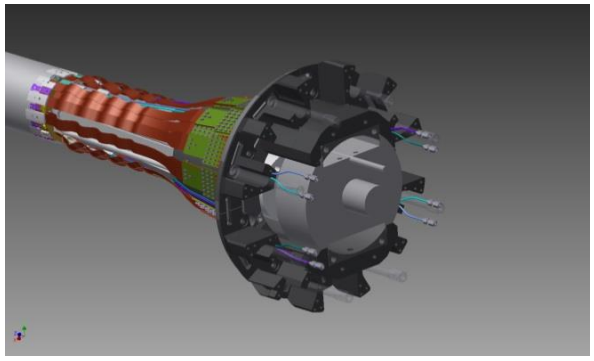
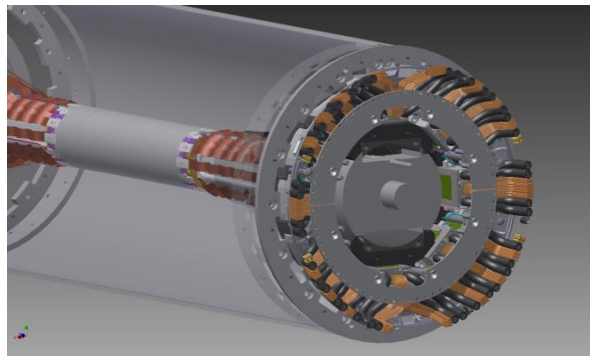
Thursday 22 May 2014

09:00	Slides **VXD mechanics schedule** (20')	S. Tanaka
09:20	Slides **KEK preparation stauts** (20')	S. Tanaka
09:40	Slides **PXD mechanics status** (20')	B. Muller
10:00	**Thermal Mock status** (20')	K. Gadow
10:20	Slides **SVD mechanics status** (20')	F. Buchsteiner
10:40	**Service work discussion with AIM mockup** (2h00')	
12:40	**VXD mechanics plan until BEAST phase II(discussion)** (20')	
13:00	MAP **Tsukuba building plan drawing** (20')	Toru Tsuboyama (KEK)

VXD Parts name definition



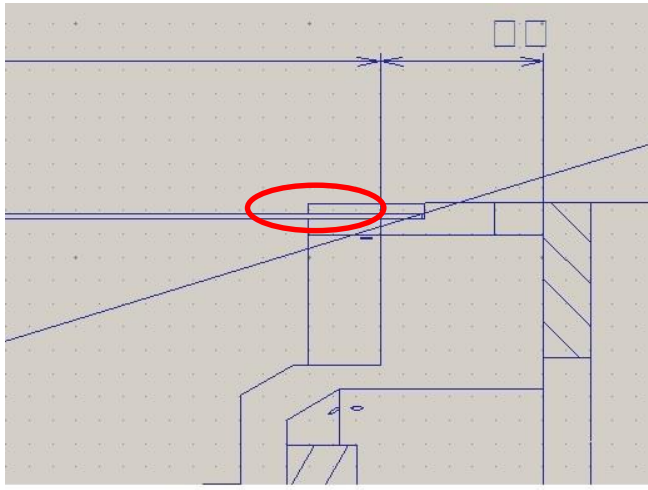
VXD assembly steps

Those procedure will be validated on BEAST assembly

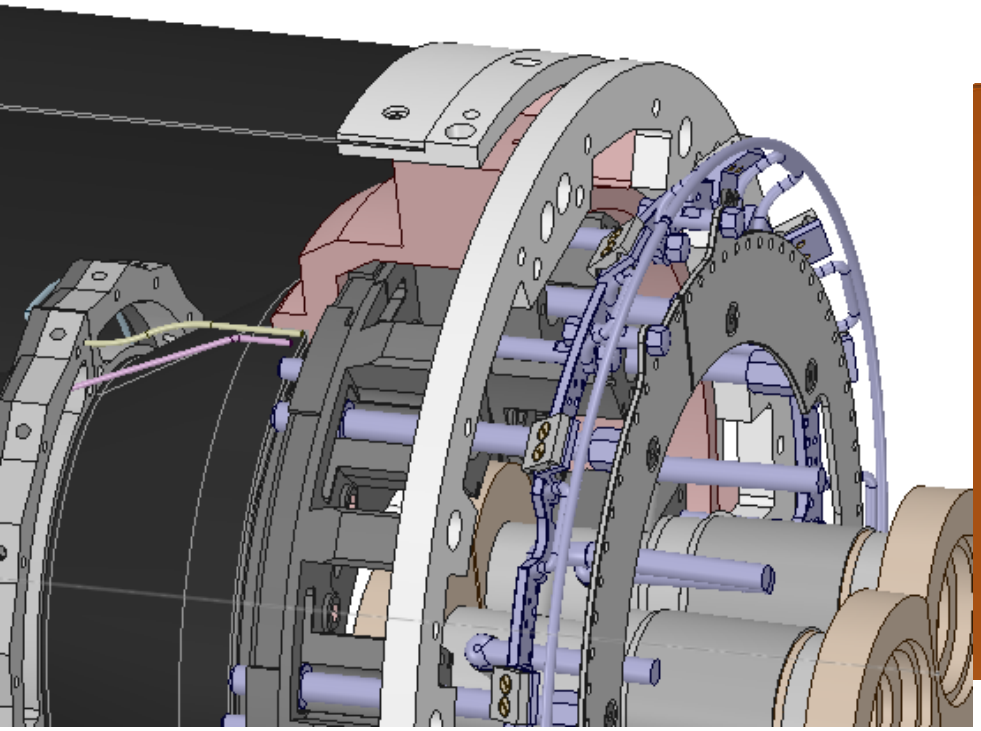
VXD mechanics status (other than sensor ladder)

- Sep. 2013 VXD assembly procedure have agreed
  Mechanics meeting @MPI,
  VXD workshop@DESY and
  B2GM satellite meeting
- Nov. 2013 BEAST VXD design has agreed
  - Starting parts production
  - All of sub-parts are delivered in March
- Feb. 2014 Material budget issue has found
- May. 2014 tentative VXD design has prepared
- Jun. 2014 (B2GM) decision of VXD
  mechanics design (also installation method)

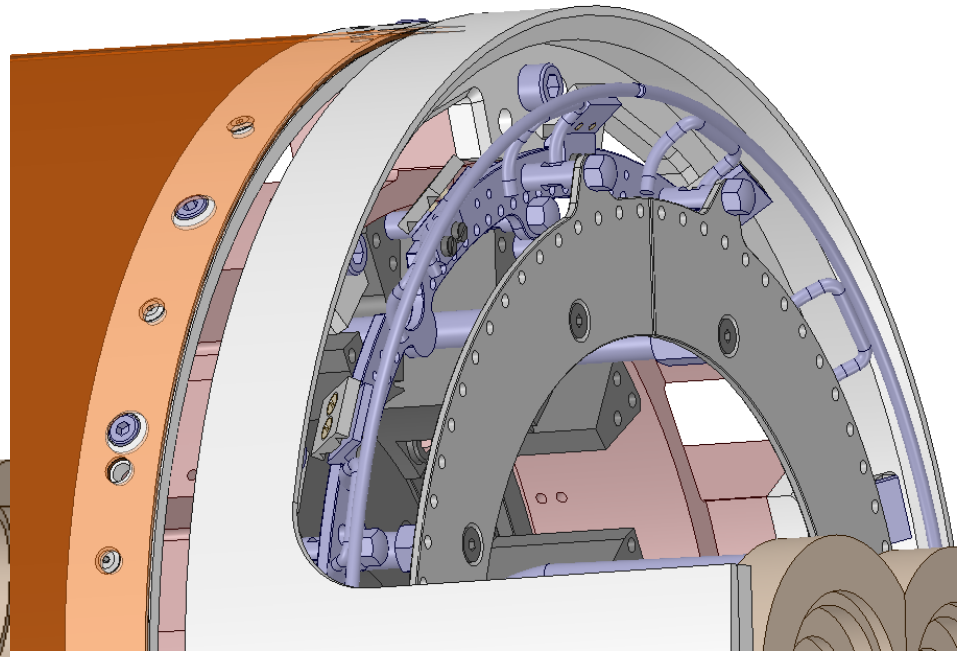


Design difference

BEAST VXD



Temp. VXD design



- In order to avoid material budget issue at forward end of outer cover,

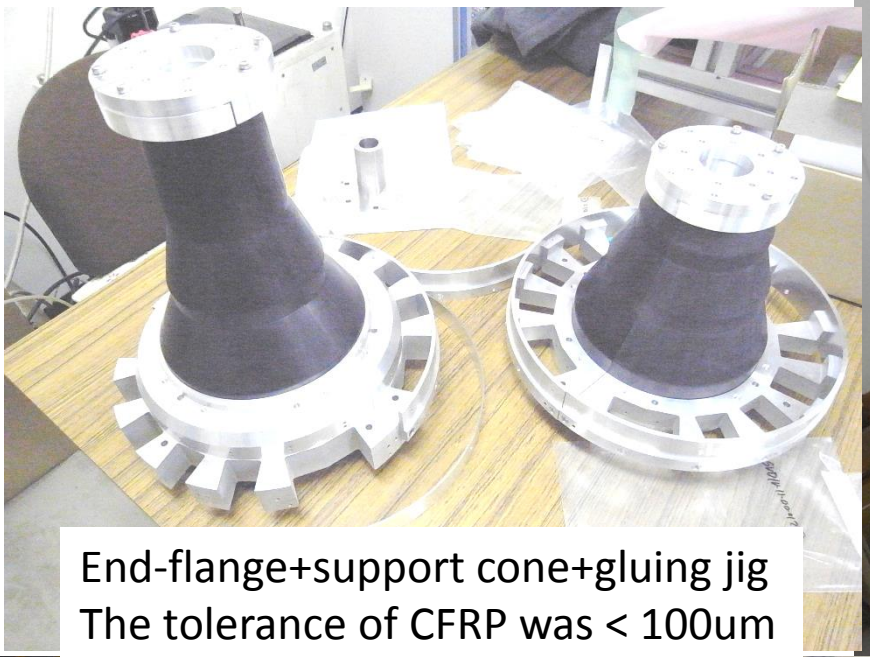
The VXD for physics design has modified.

No changes for PXD system including services space

KEK currents status

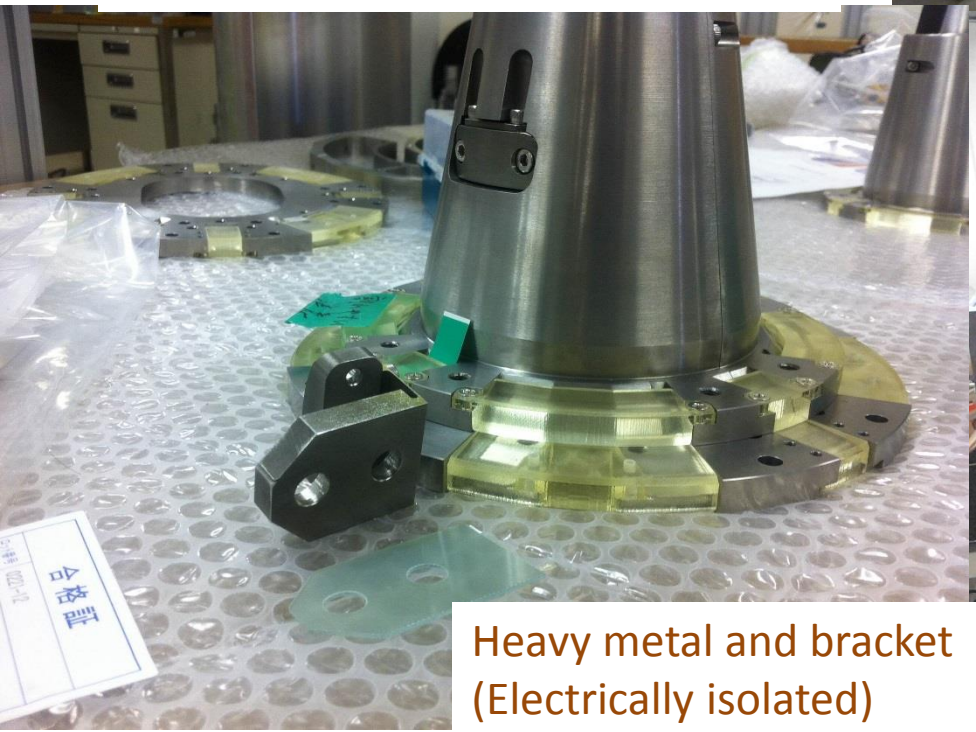
- VXD Assembly test
  - BP(mockup)+Heavy metal shields
- Gluing test
  - End-flange + CFRP support cone + CFRP outer cover
    - Gluing jigs are already prepared
  - CFRP support cone + End-rings(mockup but it will use for BEAST)
    - Gluing jig (as first try) will be ordered soon
- SVD ladder mount table preparation

Heavy metal and endring mockup for BEAST

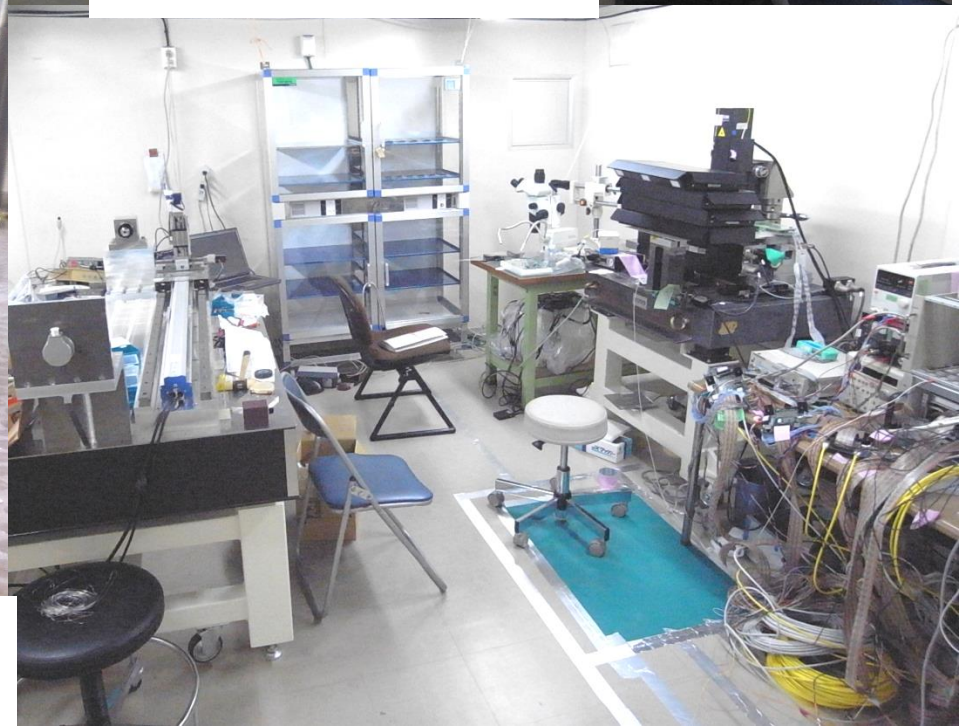


End-flange+support cone+gluing jig
The tolerance of CFRP was < 100um

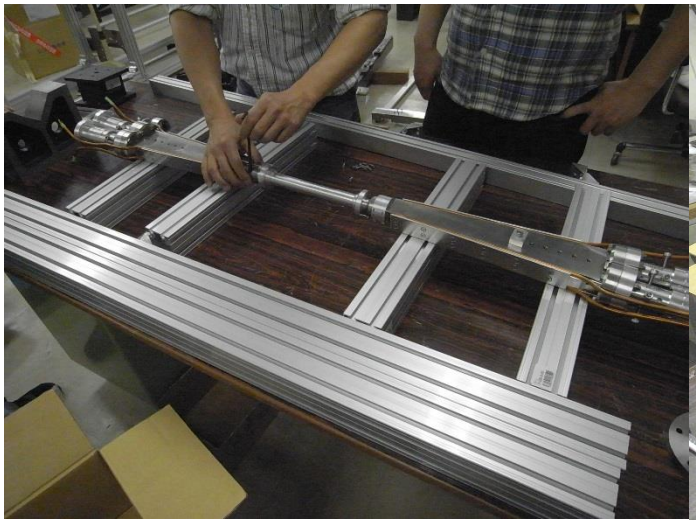
SVD ladder mount table

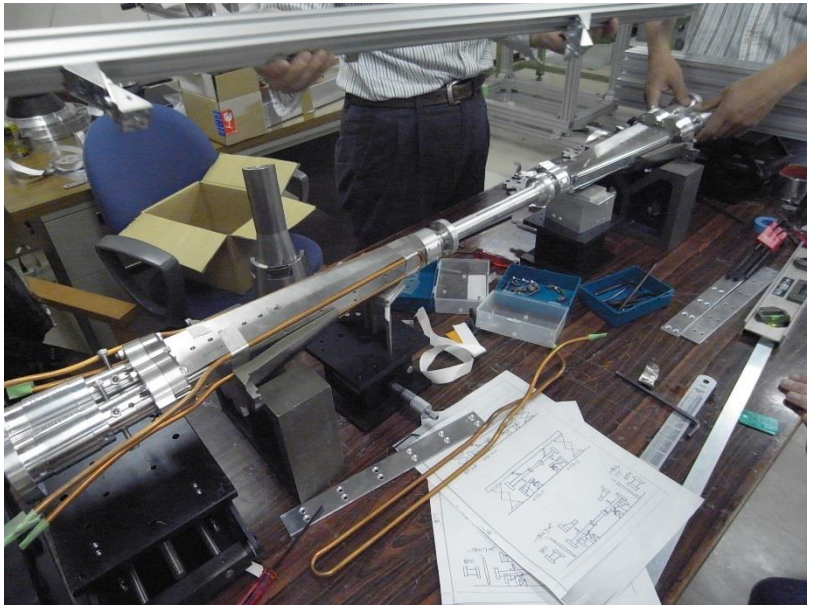


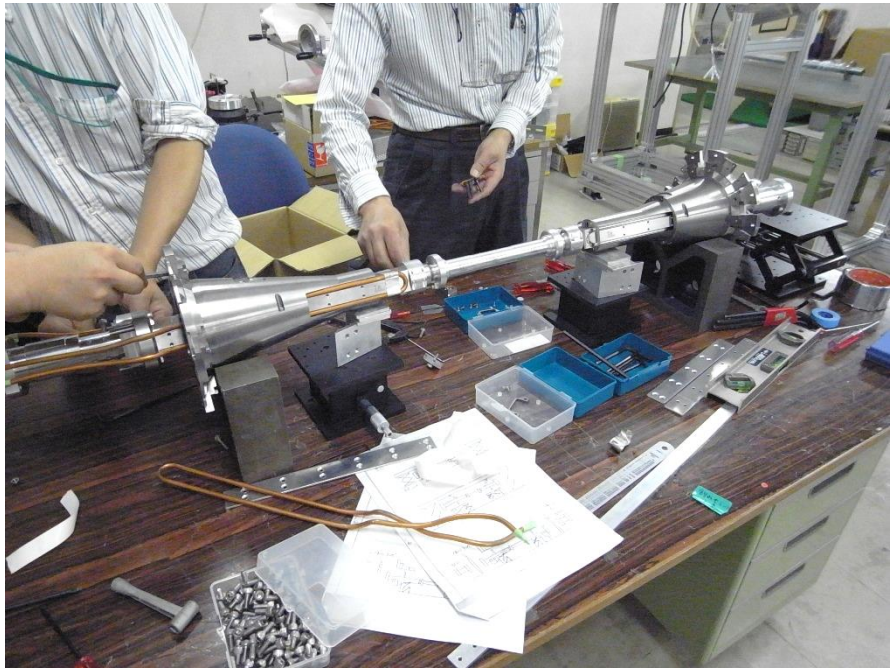
Heavy metal and bracket
(Electrically isolated)



VXD assembly procedure and requests for VXD assembly table



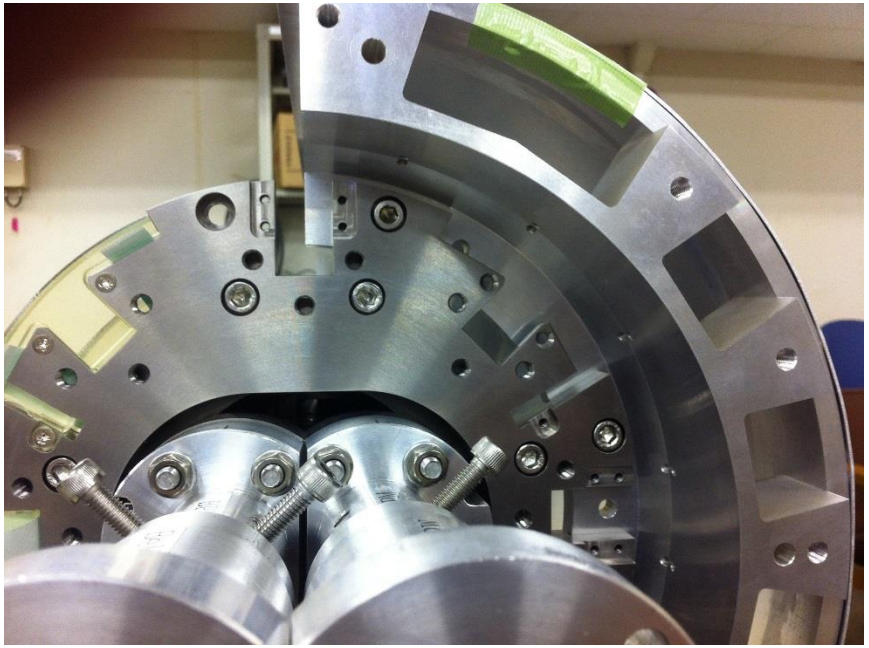




VXD Parts preparation

- Beam pipe for Beast run
  - Delivering around next B2GM
- Beam pipe for physics run
  - IP chamber and crotch part will be produced individually in this fiscal year
  - Au plating and final connection will be done later (after feedback by BEAST phaseII data)
- Heavy metal shield
  - Shields for BEART run are delivered
  - The sintered HM shields blocks for physics run are delivered (the final machining will be in the next year)
- SVD End-flange and outer connection ring
  - The end flanges for Beast run are prepared
  - end flange and outer connection ring for physics run will be produced in this year (need for SVD ladder mount)

Parts preparation



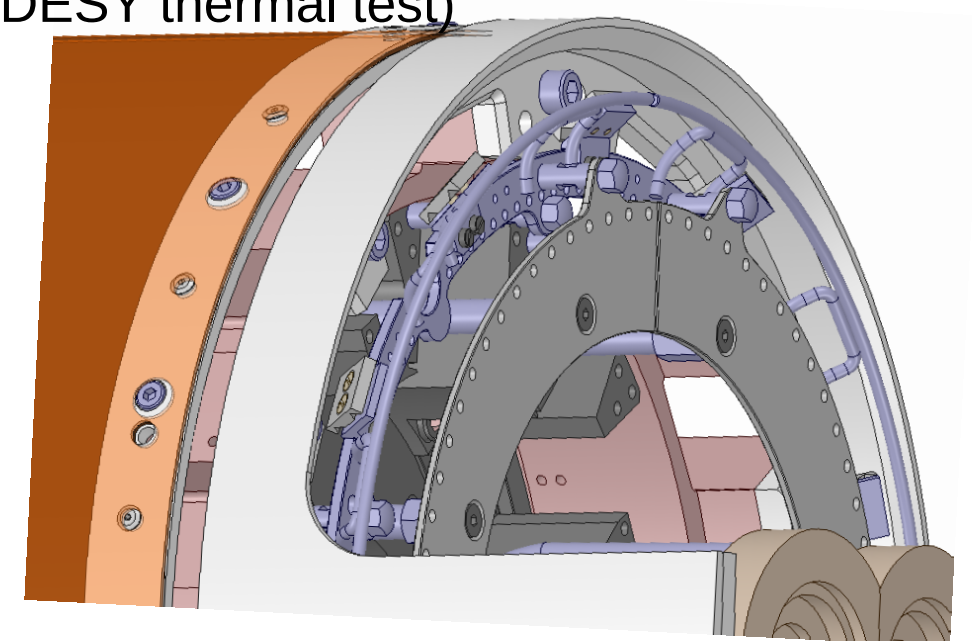
- CFRP outer cover
  - Beast run materials are delivered
  - Outer cover for physics run

  will be produced in this year,

  after final agreement of VXD design
- CFRP support cone
  - CFRP support cones are delivered

    (for BEAST run, physics run, DESY thermal test)
- PXD PP support blocks
  - Not prepared yet
- VXD service supporting rings
  - Not prepared
- PXD mount block
  - It will be made by HM,

    but not final at present



VXD assembly

BP+HM+PXD

- Beam pipe alignment procedure idea : OK
- Beam pipe + heavy metal shield connection: OK
- PXD system mount : (Model for test mount will send to KEK around Sep)
- PXD PP: need PP and support block mockup to check service space in next B2GM
- PXD mount arm design: (should start soon)
- Service space for piping and cables: will be checked in next B2GM

VXD heavy part+ SVD

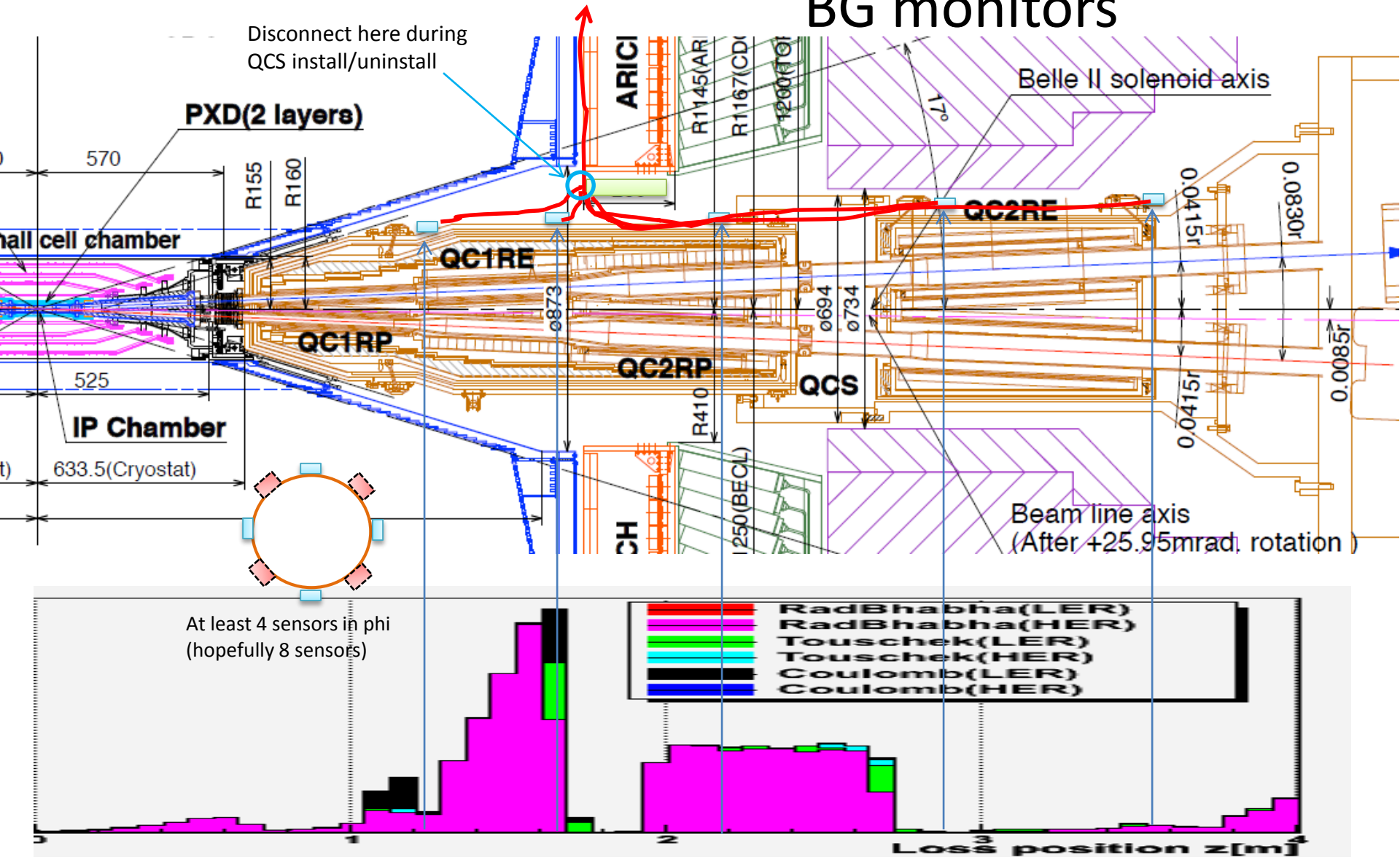
- Preassemble check: done
- Support cone+ end-flange gluing test: once by KEK option but not checked the precision
- SVD endring gluing tool: not prepared yet (should be prepared soon by KEK and DESY options for each)
- SVD division tool: not prepared yet (but will be similar with SVD2 case)
- Cables and pipes fixing on end-flange: need more detailed design

VXD transportation

VXD Transportation (B1->installation position)

- VXD table -> Tsukuba B4
  - Wrapping services before dismantle from VXD table
  - Several ideas for transportation are discussed in mechanics meeting (will also be discussed in B2GM)
- Tsukuba B4 floor -> installation area
  - MPI(Benny's tool) idea can be adopt

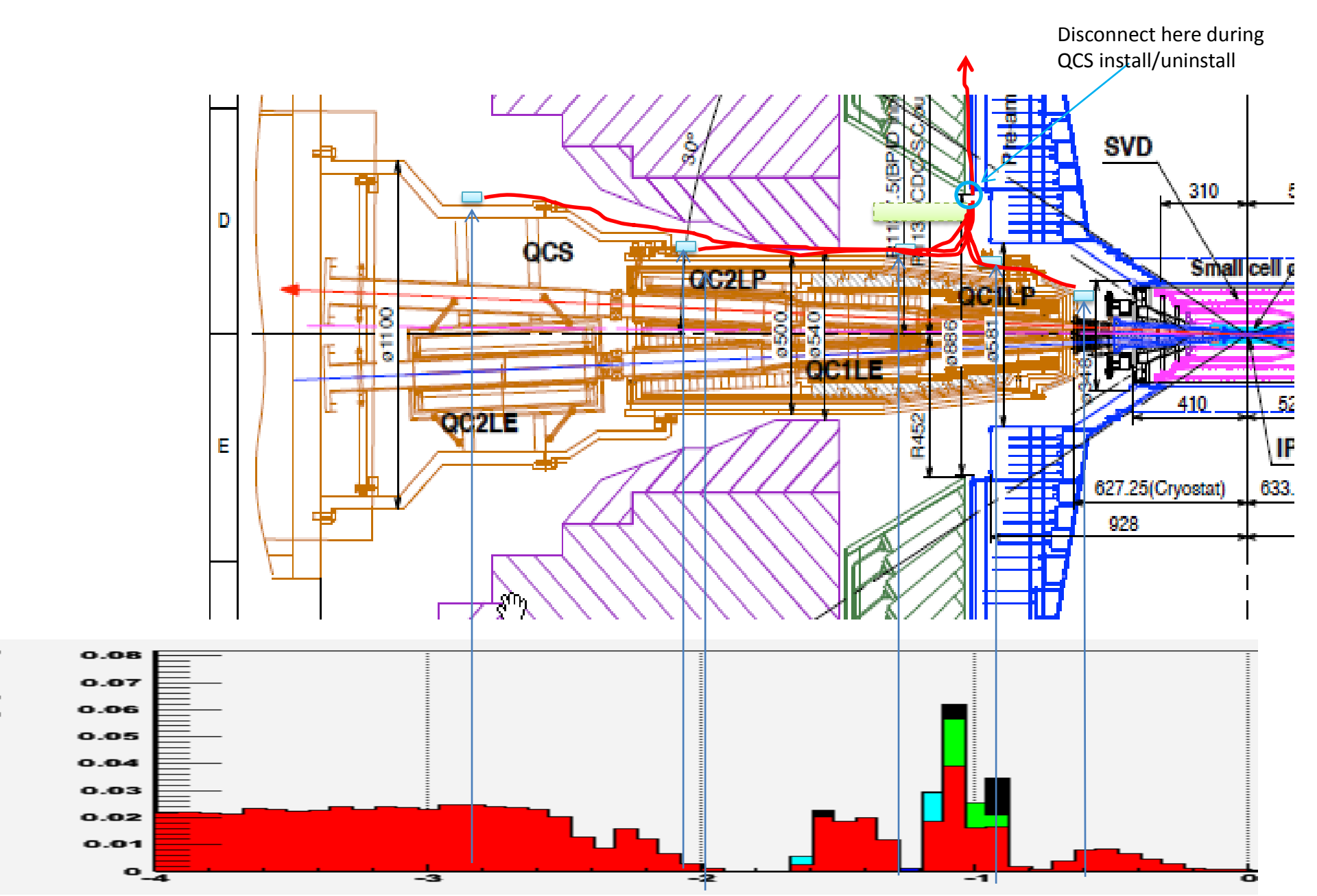
BG monitors



BG monitor will be put 5 points on Z direction and 4~8 on phi (20~40 in total)

Scintillator 10mmt (area is depends on the hit rate)

Front electronics place and cable size is on investigating.


Disconnect here during
QCS install/uninstall
D
E
QCS
QC2LP
QC1LP
QC2LE
QC1LE
SVD
310
410
627.25(Cryostat)
928
30°
R452
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-4
-3
-2
-1
0

B2GM plan

- On Gemba meeting 18th,
  - PXD mount space check
  - AIM mockup preparation (checking messing parts, tools)
  - SVD ladder mount table demonstration
  - CO2 piping route check
- 23th VXD mechanics meeting
- 24th afternoon-25th morning VXD installation review
- 25th afternoon VXD mechanics meeting
  - Decision of VXD design for physics run

Summary

- BEAST Beam pipe will be delivered in June
- Beam pipe for physics run will start production soon
- Almost all of BEAST mechanics parts are delivered.
  - Assembly test is ongoing
- VXD final design and installation method will be decided in the next B2GM
- BG monitor between CDC and QCS on BEAST phaseII

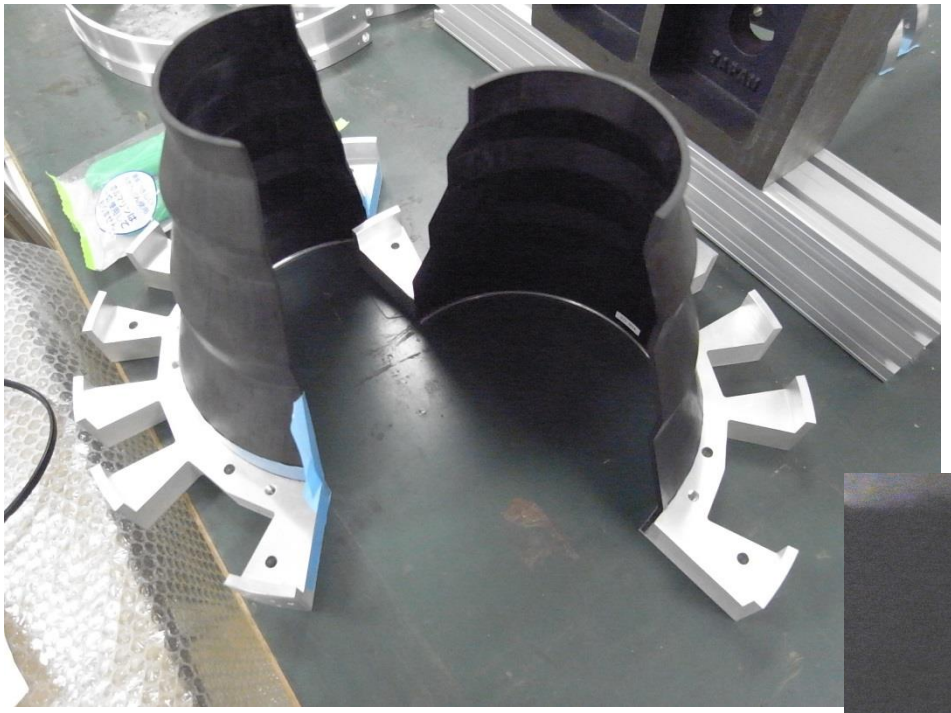
Bkup

SVD assembly

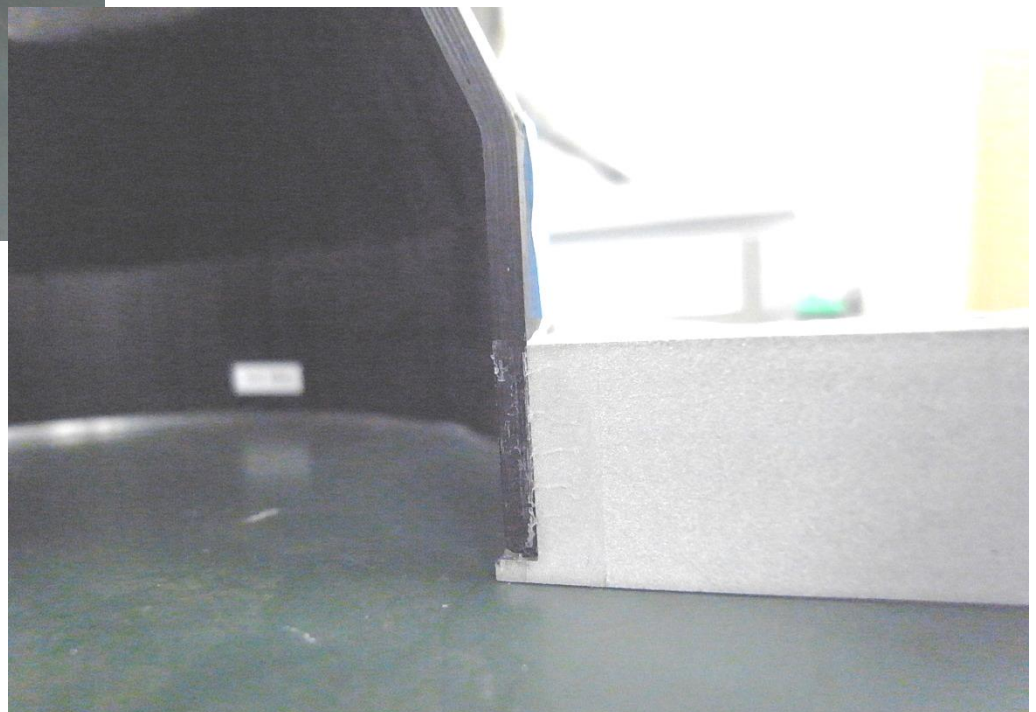
- Ladder mount table
  - Parts are delivered
  - Alignment tool preparation is ongoing
  - Two ladder mount option (horizontal movement by KEK, vertical by HEPHY will be prepared
  - Mount arm will be tested in next B2GM

- Check item (repeatability test)
  - SVD outer cover connection and dismantle of connection bar
  - Adapting connection bar and dismantle of outer cover

CFRP support gluing test



Glue: starch paste
(for temporal connection)



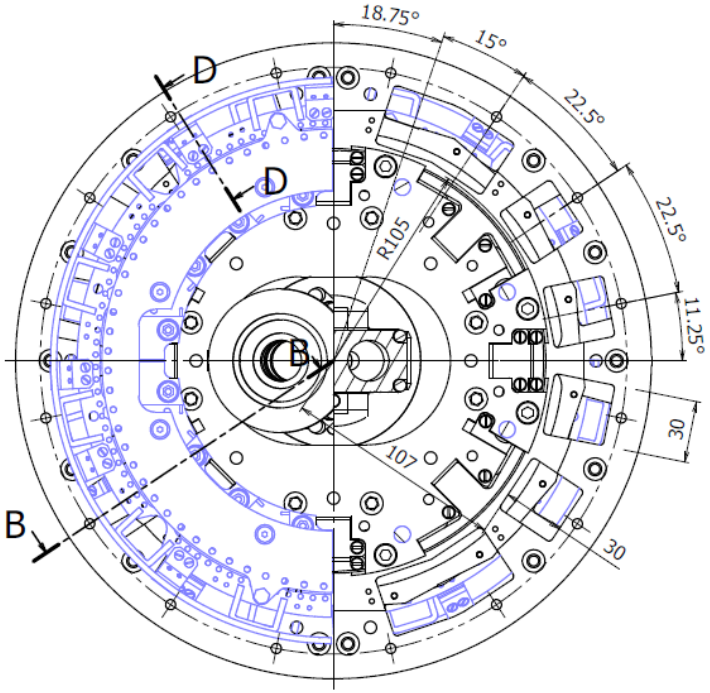
Measurement is not finished

VXD design (for physics) update

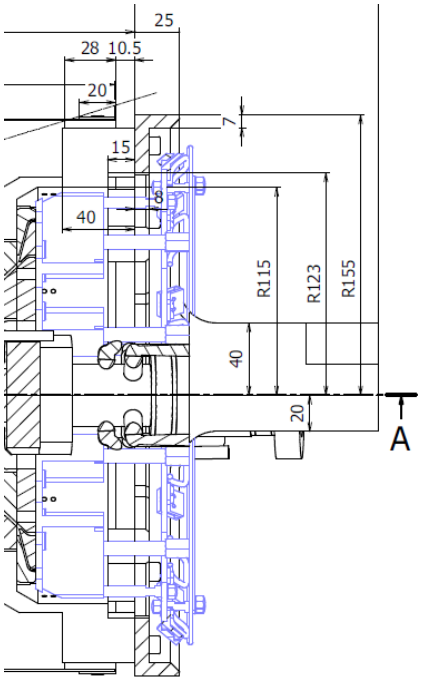
- Current tentative design:

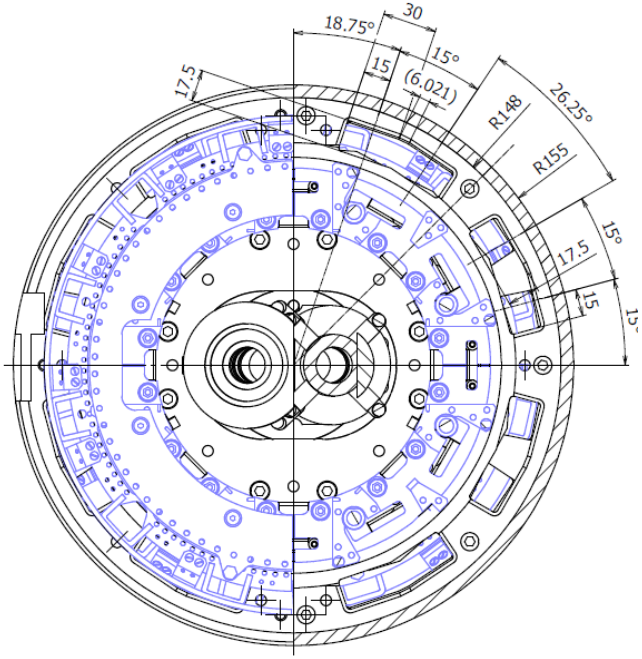
https://belle2.cc.kek.jp/svn/groups/vxd_mechanics/ir/SVDstructure/

SVD-OC-01_12-temp_140404



BWD





FWD

KEK IR budget in this fiscal year has assigned

IR activities by this budget:

0, BP for BEAST (IP chamber and crotch part are produced respectively)
IP chamber connection is schedule in May-June.

1, VXD test assembly (by BEAST parts)

2, B1 equipment, service (cooling, dehumidifier, clean booth)

3, Monitoring sensor preparation

4, Beam pipe (for physics run) production
IP chamber and crotch parts will be produced, but Au plating and final connection will be done in next fiscal year.

5, SVD structure production (for physics run)
(CFRP outer cover + brackets, End-flange, End-rings, Installation support ring)

6, VXD assembly table preparation

7, Cooling system for BP (almost similar with one used in Belle system)

8, SVD division tool and endring gluing jig will be covered by SVD budget

Subjects postponed to next year

A, Final machining of heavy metal shields (~ 2 months).

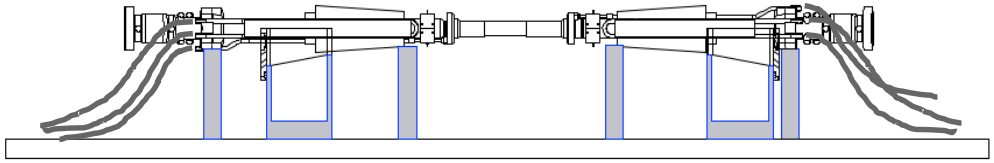
B, Au plating of IP chamber and final connection (taking 2~3 months)

C, VXD installation tools

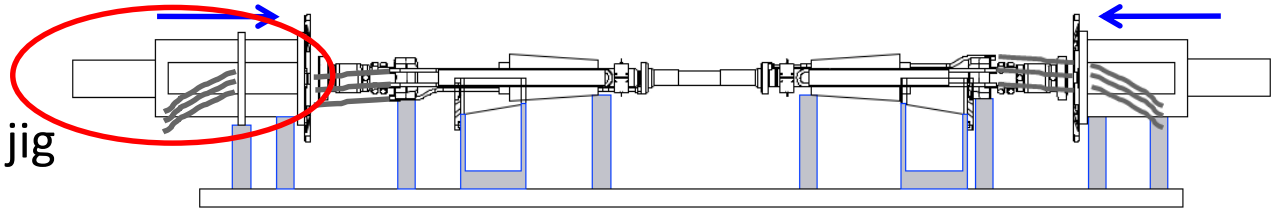
BP alignment steps before PXD mount

Setting shield on support

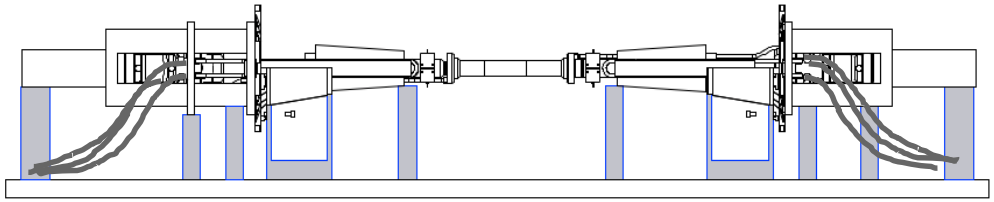
Beam pipe positioning by
Shim or screwing



Putting Flange/Mount jig



Connecting flange with
lower shield



Connecting flange with
upper shield