

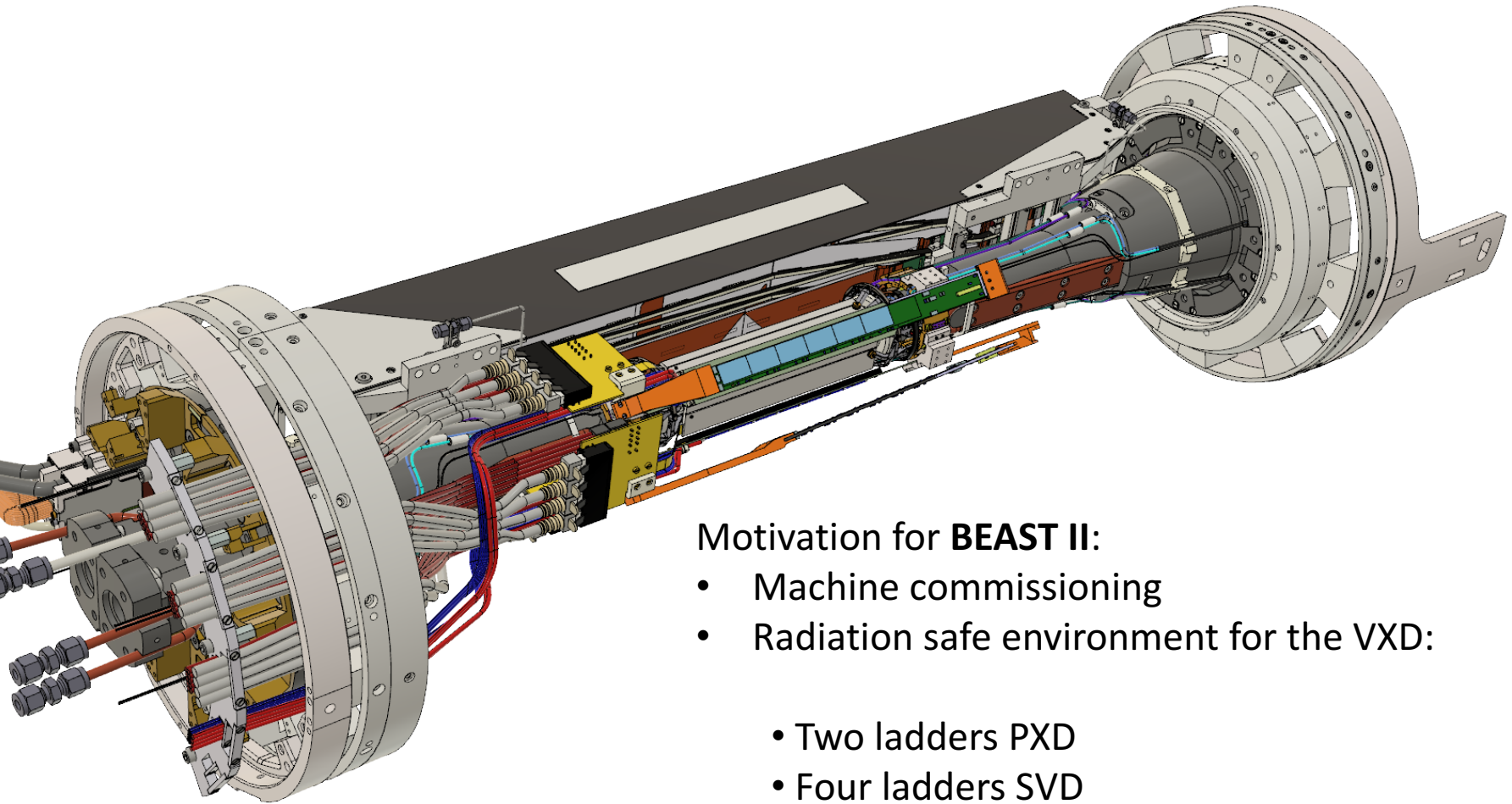
Operation of Phase-2 VXD

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TRG/DAQ workshop 2017

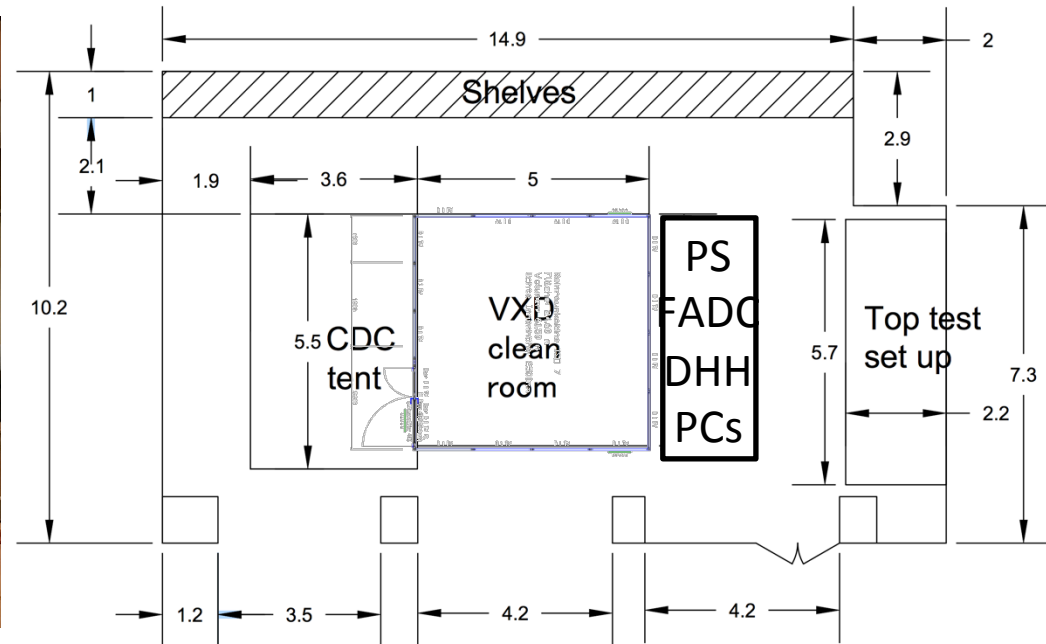
Phase-2 VXD/BEAST setup



Motivation for **BEAST II**:

- Machine commissioning
- Radiation safe environment for the VXD:
 - Two ladders PXD
 - Four ladders SVD
 - Dedicated radiation monitors
FANGS, CLAWS, PLUME, radiochromic foils

Phase-2 VXD Integration and Installation



- We will construct a new clean room on B4 beside the existing CDC tent.
 - will be completed on Sep 6
- Locate power supply, and readout electronics outside the VXD clean room.
- The optical cables/network cables will be laid between the electronics and E-hat (COPPER, FTSW, etc.)

Integration and Installation Schedule

- **Phase-2 VXD integration works**
 - - 20 Sep: Phase-2 beam pipe assembly
 - 22 – 26 Sep: Diamond installation + test
 - 27 Sep – 3 Oct: PXD installation + test
 - 4 – 10 Oct: FANGS/CLAWS/PLUME installation + test
 - 11 – 17 Oct: SVD installation + test
- **Phase-2 VXD installation**
 - 7 Nov: Phase-2 VXD insertion to Belle II
 - - 27 Nov: VXD cabling/piping
- **We are planning to have daily Gemba meeting on 8:45 from 4 Sep.**

Phase-2 VXD commissioning plan

- **Sep 19-23: VXD DAQ integration test w/o detector**
 - DHH will be located beside B4 clean room (TBC)
 - FADC will be located on the top of the Belle
 - Complete system test with limited data rate (SVD will try 30kHz trigger here.)
- **Oct 19 – Nov 1: Phase-2 VXD test before installation**
 - Phase-2 VXD is in B4 clean room
 - DHH + FADC will be located beside the clean room
- **Nov 28 – Dec 11: Phase-2 VXD test after installation**
 - Phase-2 VXD is inside the Belle II detector
 - DHH + FADC will be located on the top of the Belle
 - Complete system test with full data rate at KEK w/ detectors
- **Dec – Feb: Commissioning with cosmic ray data**
- **DAQ for above commissioning**
 - PXD/SVD standalone DAQ (PocketDAQ?) + global DAQ

Phase-2 VXD operation

Main goals of the phase-2 VXD operation

- **Injection veto study**
 - PXD gated mode
 - Availability of “injection trigger” is essential
- **Belle Abort study(also alarm level settings)**
 - Interlock from VXD monitors
 - Defining good condition to start VXD operation
- **BG studies (measuring each BG source by special runs)**
 - SR(Synchrotron Radiation photons)
 - Radiative Bhabha
 - Touschek
 - Beam gas
- **Calibration**
 - PXD parameter scan
 - SVD noise measurement
 - SVD Vsep scan
- **VXD detector performance**
 - PXD/SVD detector performance for physics analysis
 - Check VXD infrastructure system (PS, CO2 cooling, VXD environmental monitor)
 - BG effect to the VXD performance scaled to the full luminosity

Especially important works

Phase-2 VXD operation and Phase-3 VXD commissioning

- **Feb – Summer 2018: Phase-2 VXD operation**
 - partial detector operation (only 5 FADC/FTB boards for SVD) with beam data
- **Apr – Summer 2018: Phase-3 VXD commissioning**
 - full detector operation (48 FADC/FTB boards for SVD) with cosmic data
 - scintillators will be located for the trigger signal
- **Both are completely overlapped. → We need another individual DAQ (Partitioned DAQ) for the phase-3 VXD commissioning**

**Phase-2:
Global DAQ w/ partial VXD**

