DSSD, milestones and other mechanics

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LOI design

- The LOI SVD design assumes DSSD sensors from HPK 4” line.
  - Unfortunately, HPK stopped the DSSD production.
- Alternative vendors
  - Micron → Several samples in hands: Not bad. Production from 6” wafers.
  - Kyungpook → DC coupled DSSD was produced. Test in progress.
  - Tata → Waiting for the first test production. Double-sided, double-metal and AC-coupled sensor prototype.
- Test production by Micron?
  - Sensors from 6” wafers are attractive in design of SVD.
  - Need to fix the SVD design and DSSD sizes.

Technology choices

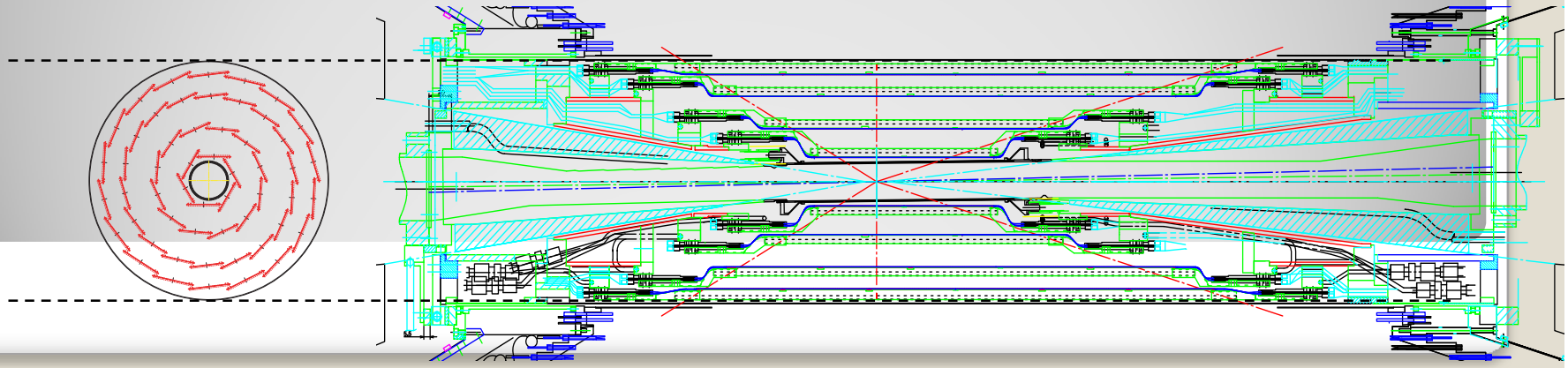
- IP chamber radius
  - We are now more conservative. Radius will be 1.5 cm or more.
- Inner layers (DSSD or pixel)
  - DSSD: We can survive with DSSD for the first 2-3 years. In case pixel sensors are not ready to be installed.
- Outer layers
  - ASIC
    - Readout with APV25. Do we have other chips?
    - Readout chips on DSSD seems to be unavoidable.
  - DSSD
    - HPK stopped production.
    - Companies in Europe countries: Micron, Canberra, SINTEF
    - Asian: Kyungpook (Korea) and Tata (India) colleagues are trying to produce DSSDs.

Milestones

- 2008
  - Demonstrate APV25 readout chain.
    - Design optimization (Osaka, Niigata)
    - Vienna group: APV25 front end, repeater and FADC
    - Cracow group: Data acquisition board (COPPER/FINNESE)
  - DSSD test production
- 2009
  - Fix the design of Silicon vertex detector including pixel.

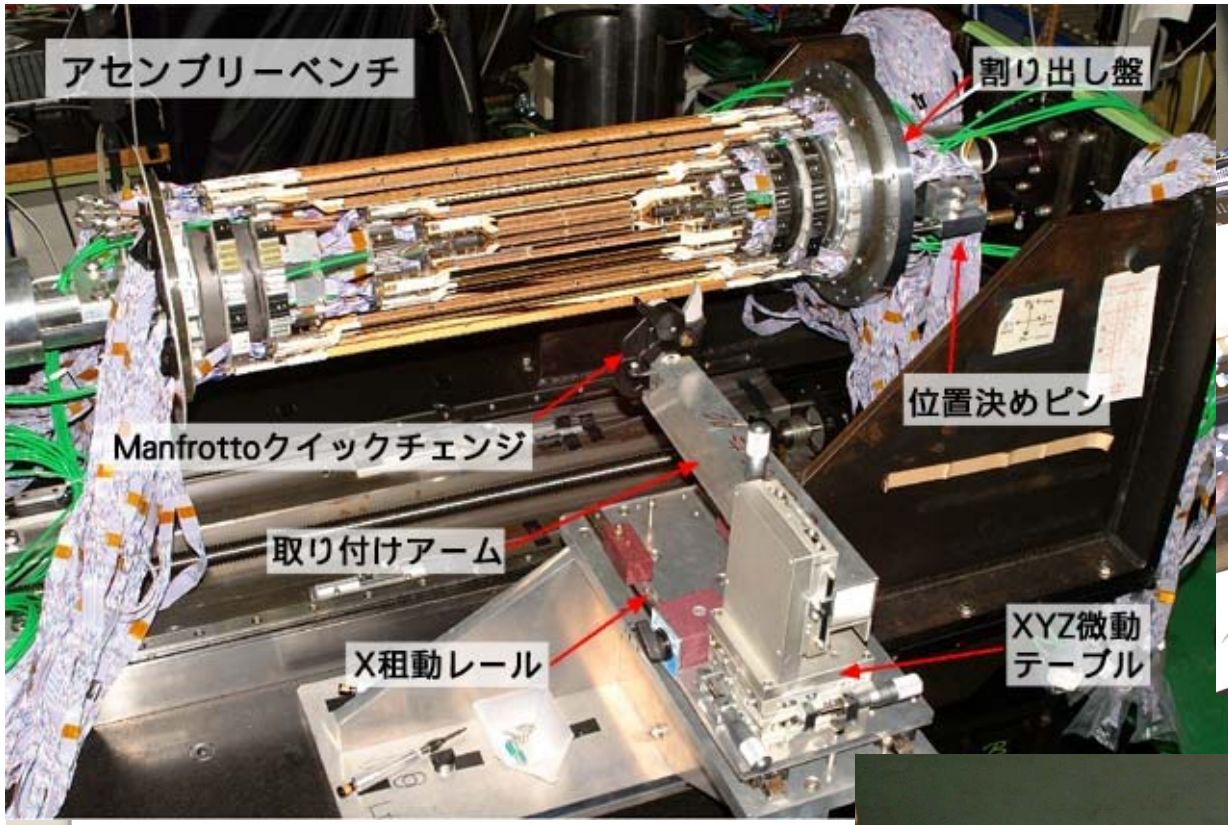
Ladder structure

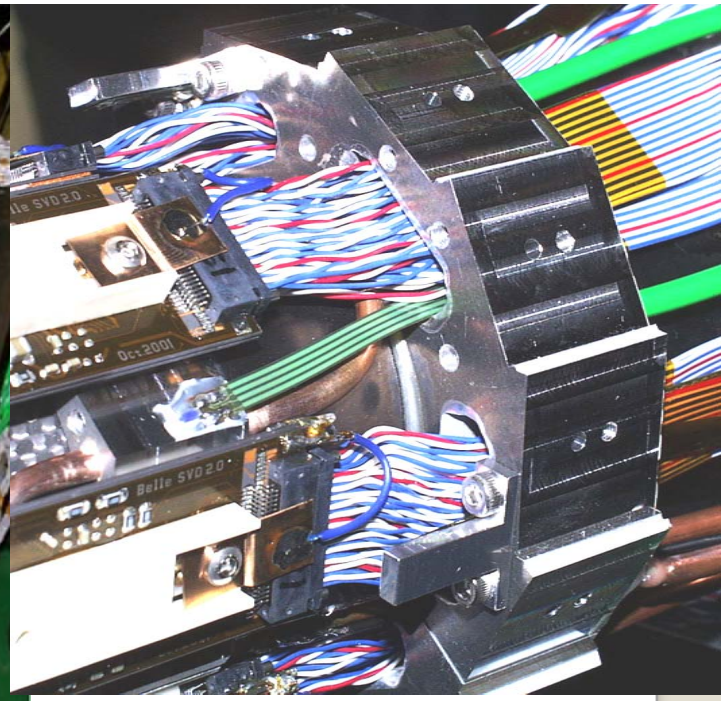
Unit to realize layer structure using DSSDs

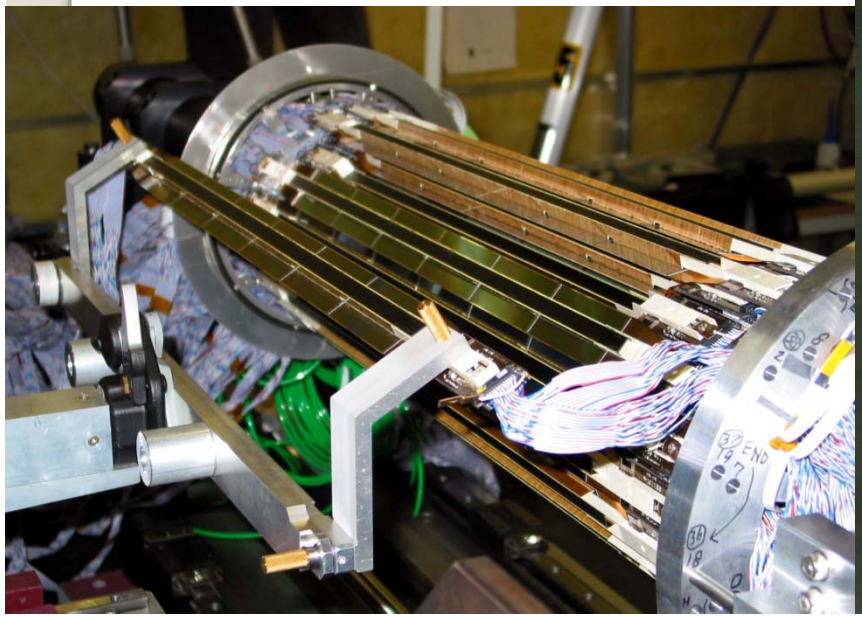


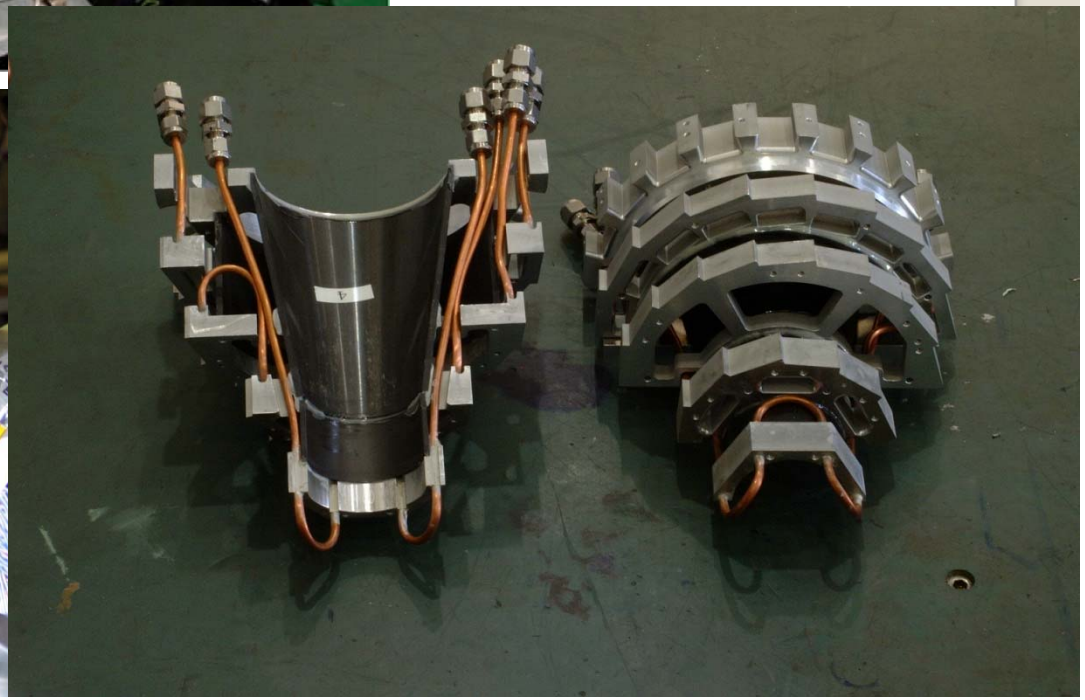
Structure / Materials of Ladder

DSSDs are hung by support structure w/ glue connectio

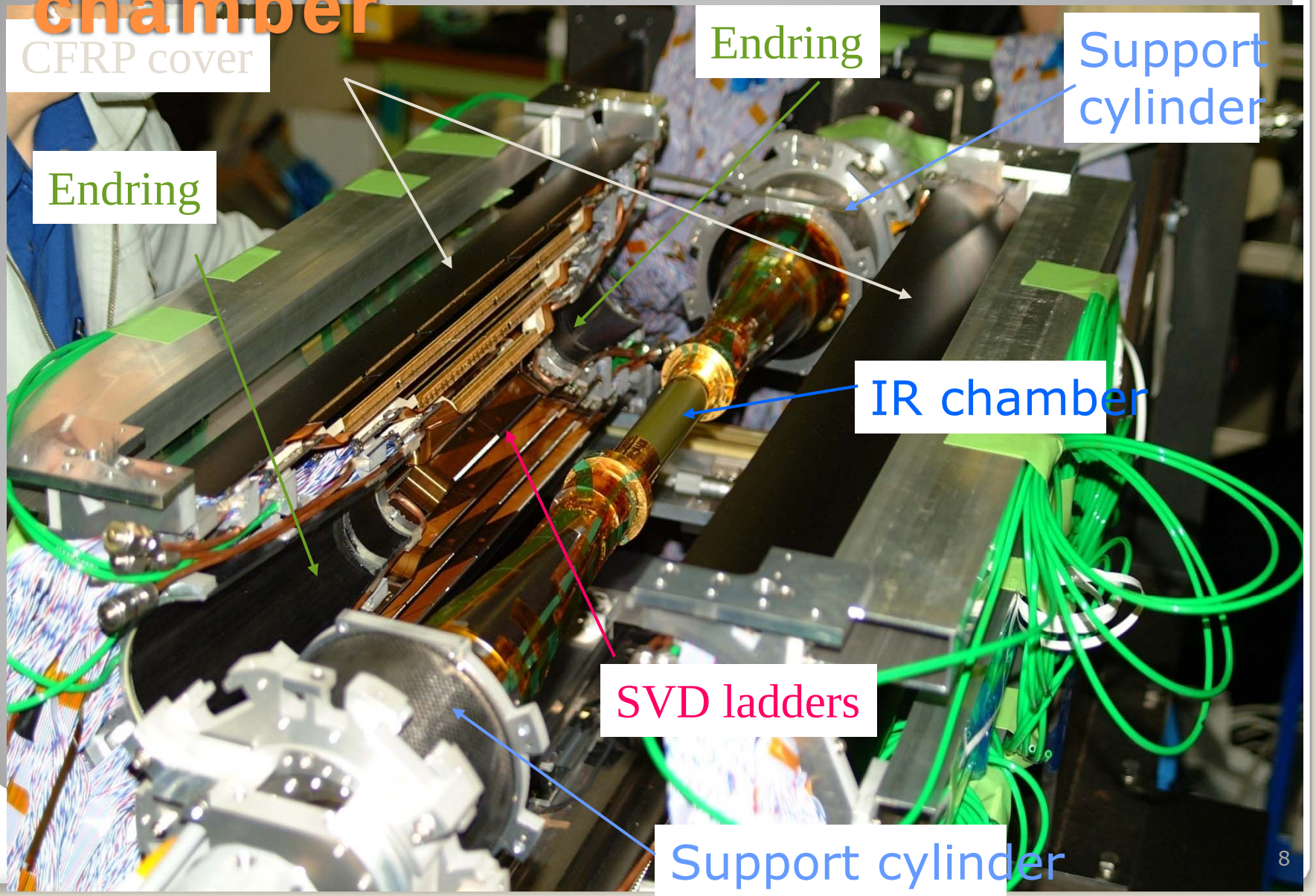

アセンブリーベンチ
割り出し盤
位置決めピン
Manfrottoクイックチェンジ
取り付けアーム
X粗動レール
XYZ微動
テーブル


Belle SVD2.0





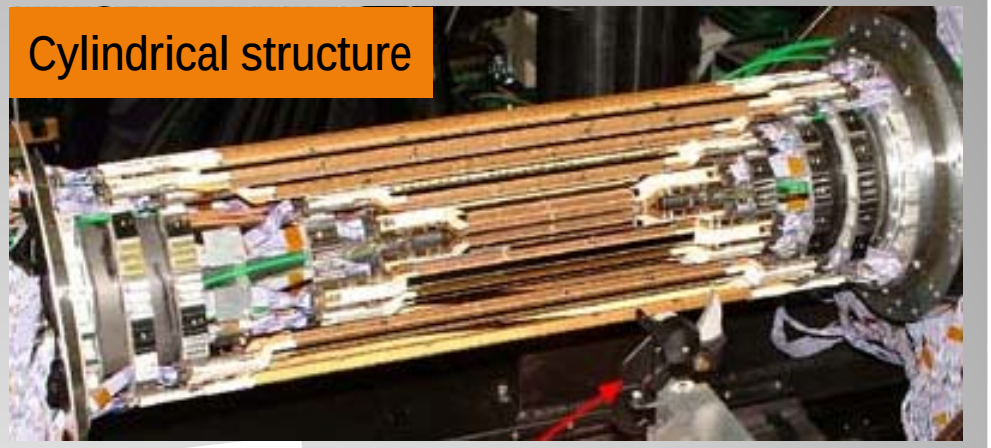
Couple the 2 half shells to IP chamber

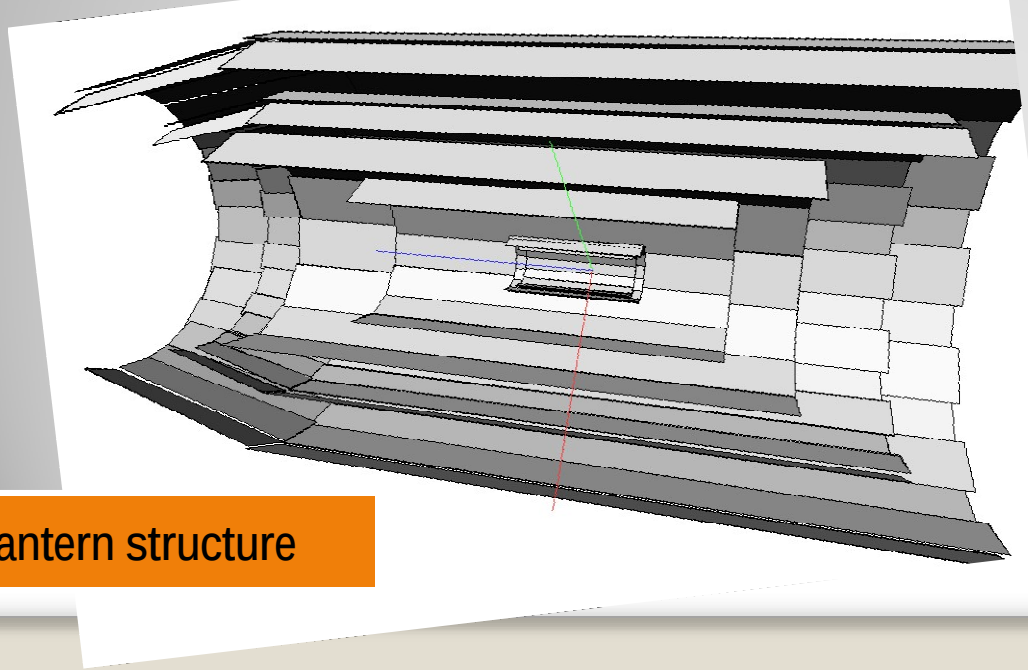


Ladder layout / mount

ladders were mounted on the endring

Cylindrical structure





Lantern structure

Innder four layers are mounted on endring

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Outer two (super-) layers are mounted on the outer cover, then cover will be mounted on the endring

Mechanical consideration

- Can strips and pixels be separated?
  - Staging/replacement of Pixel detector sometime after the installation.
- What if pixel sensor is mounted on the IP chamber, while strips are mounted on support structure?