Report from the IRENG07 workshop at SLAC

W. Lohmann, DESY

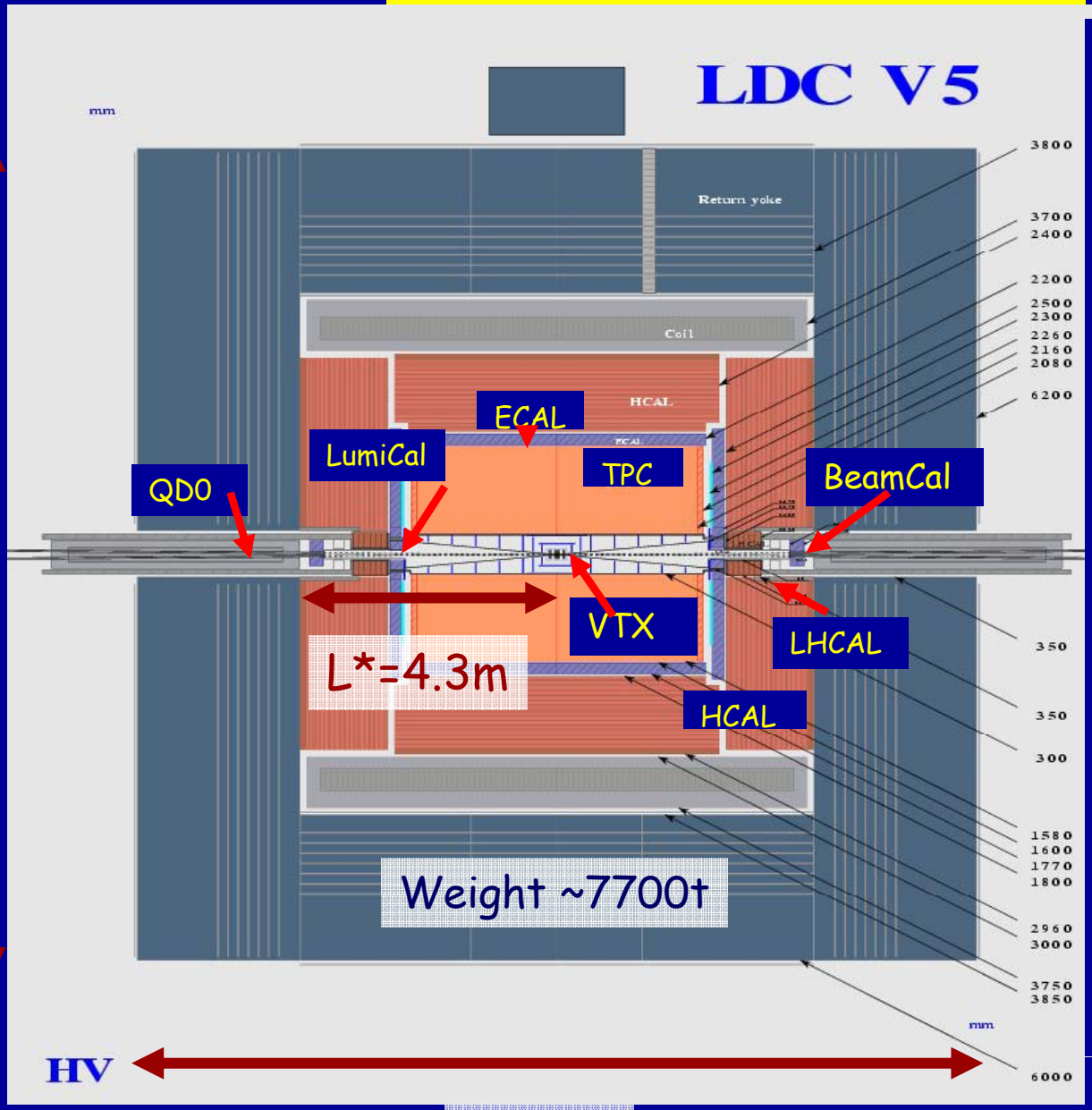
from Septembre 17 – 21, ~ 100 participants

- plenary and parallel sessions
- four working groups A, B, C, D, preparations prior the the workshop
- conclusions in the plenary, last day

Here I report on issues related to FCAL:

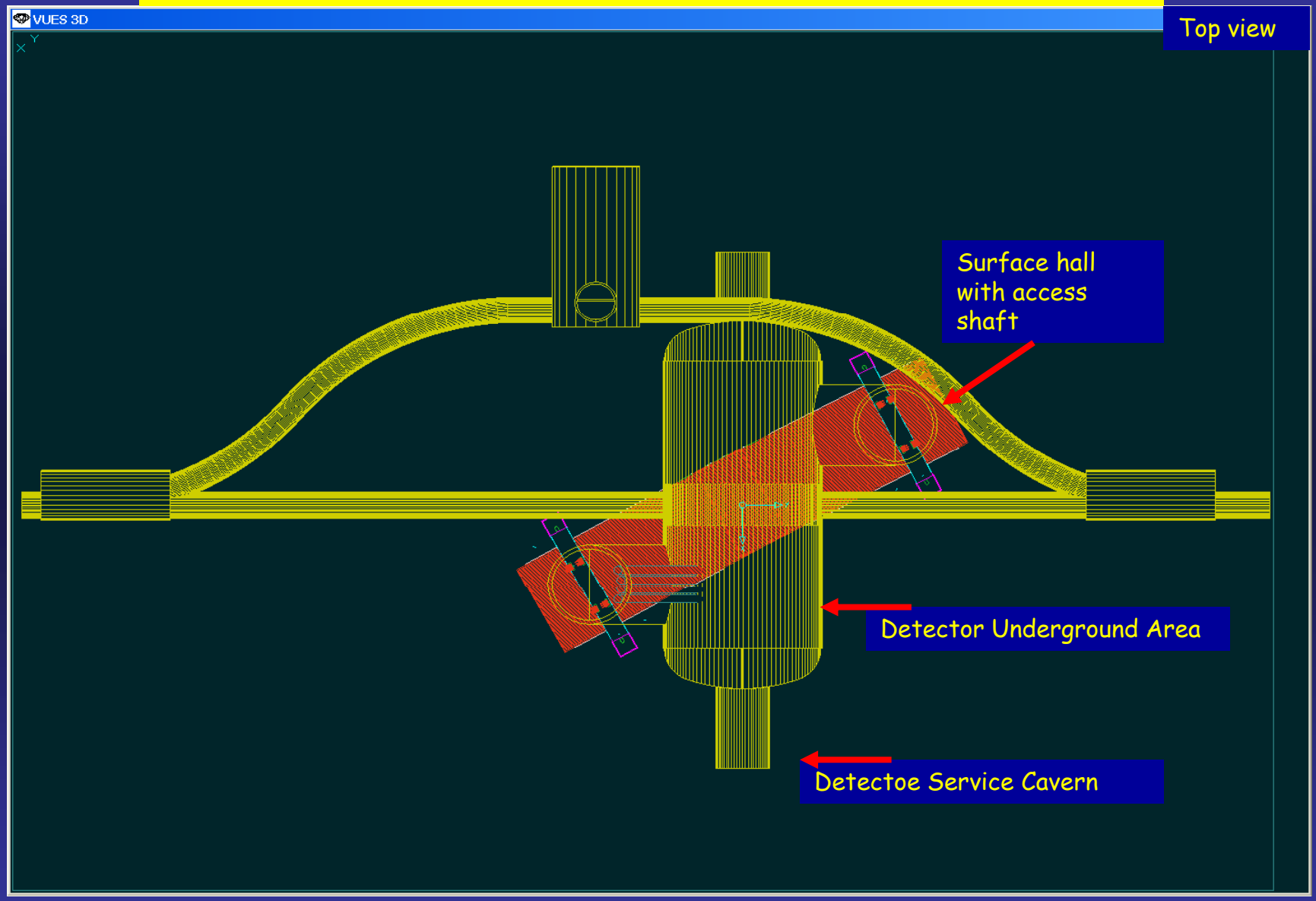
- Montage of the detector and access to inner subdetectors
- systems interfering with BeamCal

Detector Example LDC

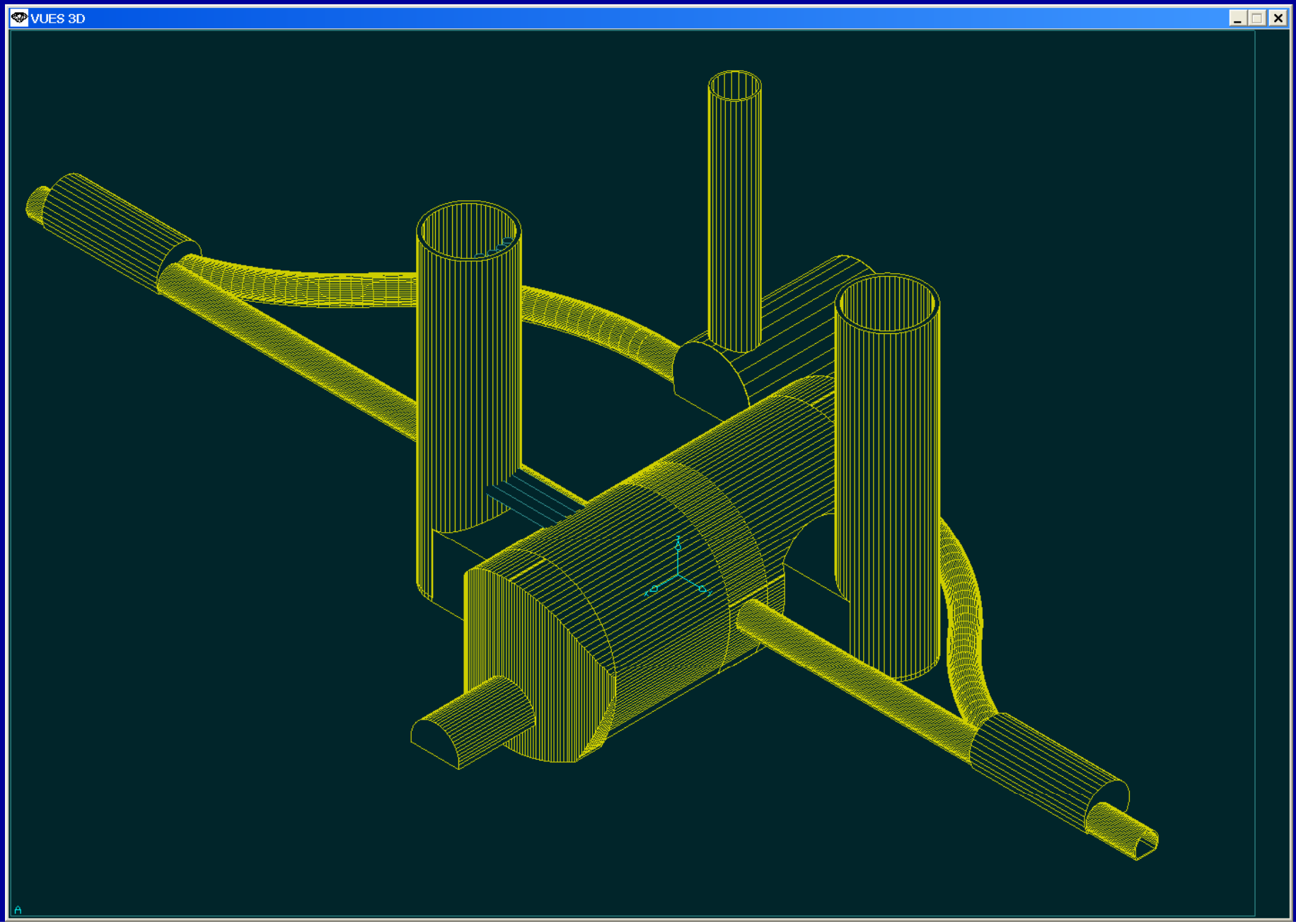


- How mount it ?
- How move it ?
- How bring it in the beam ?
- How repair it ?
- Supply of power
- Cooling and Cryo
- Radiation and background
- Vacuum
- Signal transfer
- Survey
- Services (Water, Air condition

Surface Hall and Underground Area for two Detectors

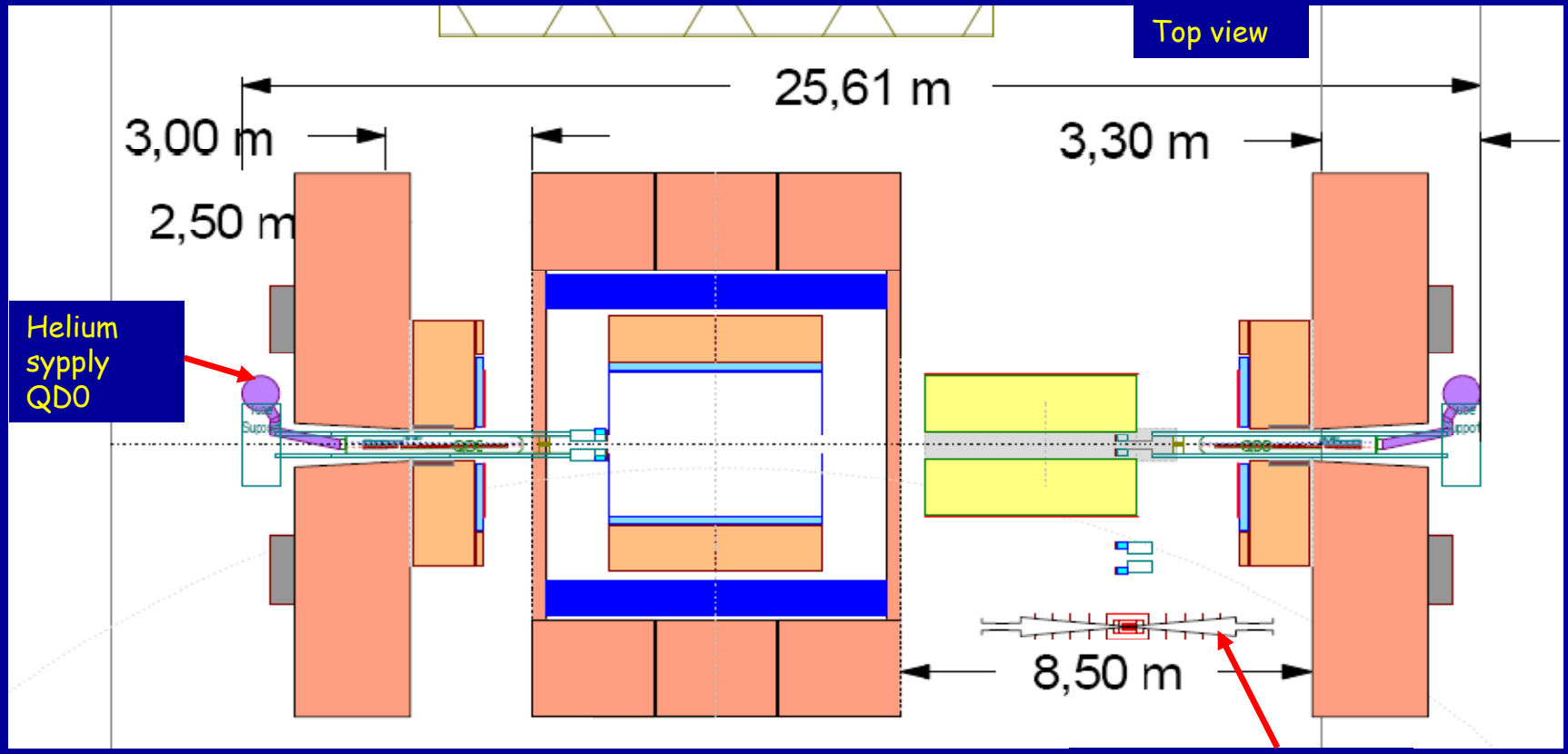


Underground Area for two Detectors



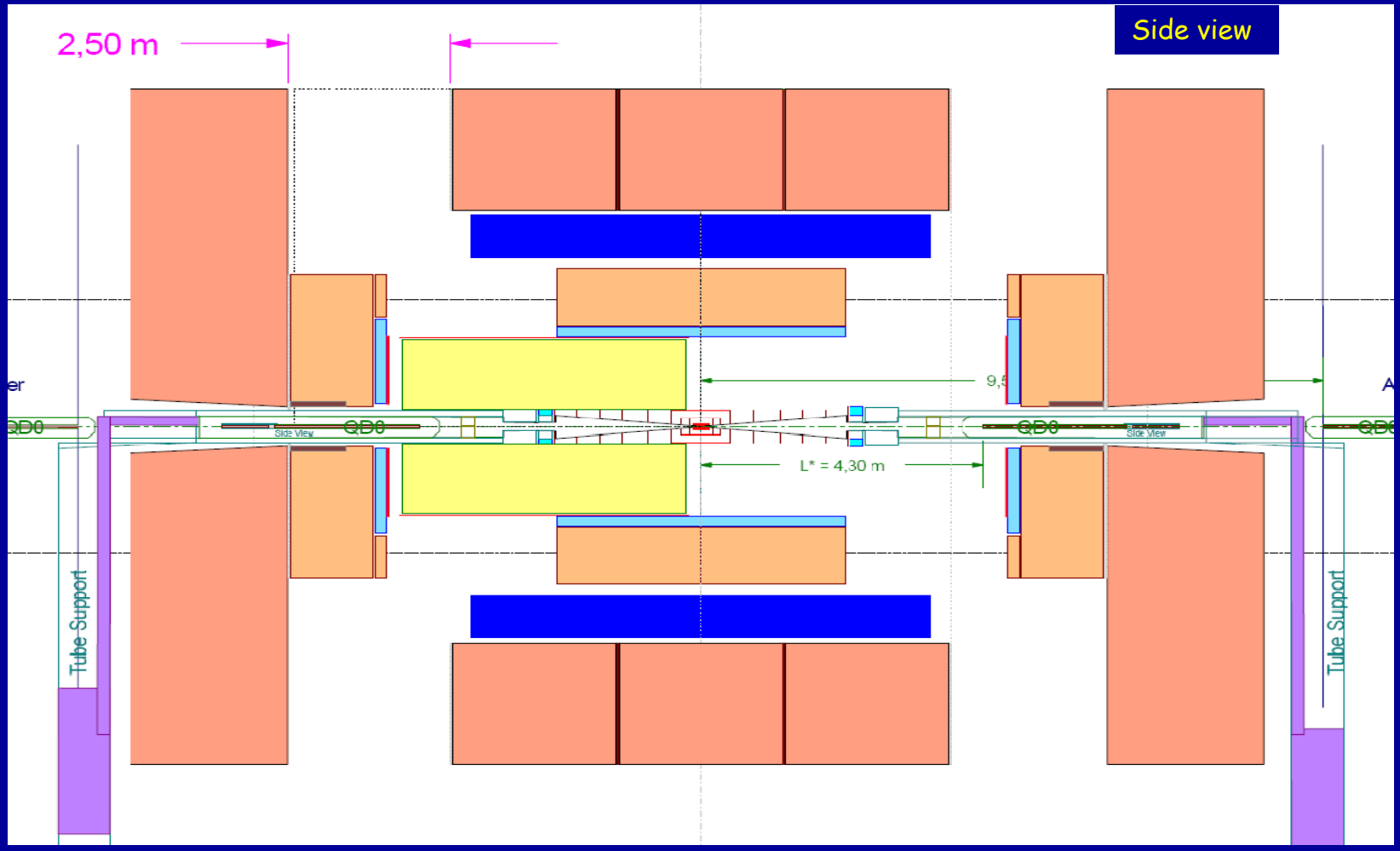
LDC Montage or full Opening

- assembly of the detector at the surface hall
- lowering down slices of the barrel and endcaps a la CMS
- completion (TPC, VTX, beampipe) in the UA
  QD0 needs helium supply

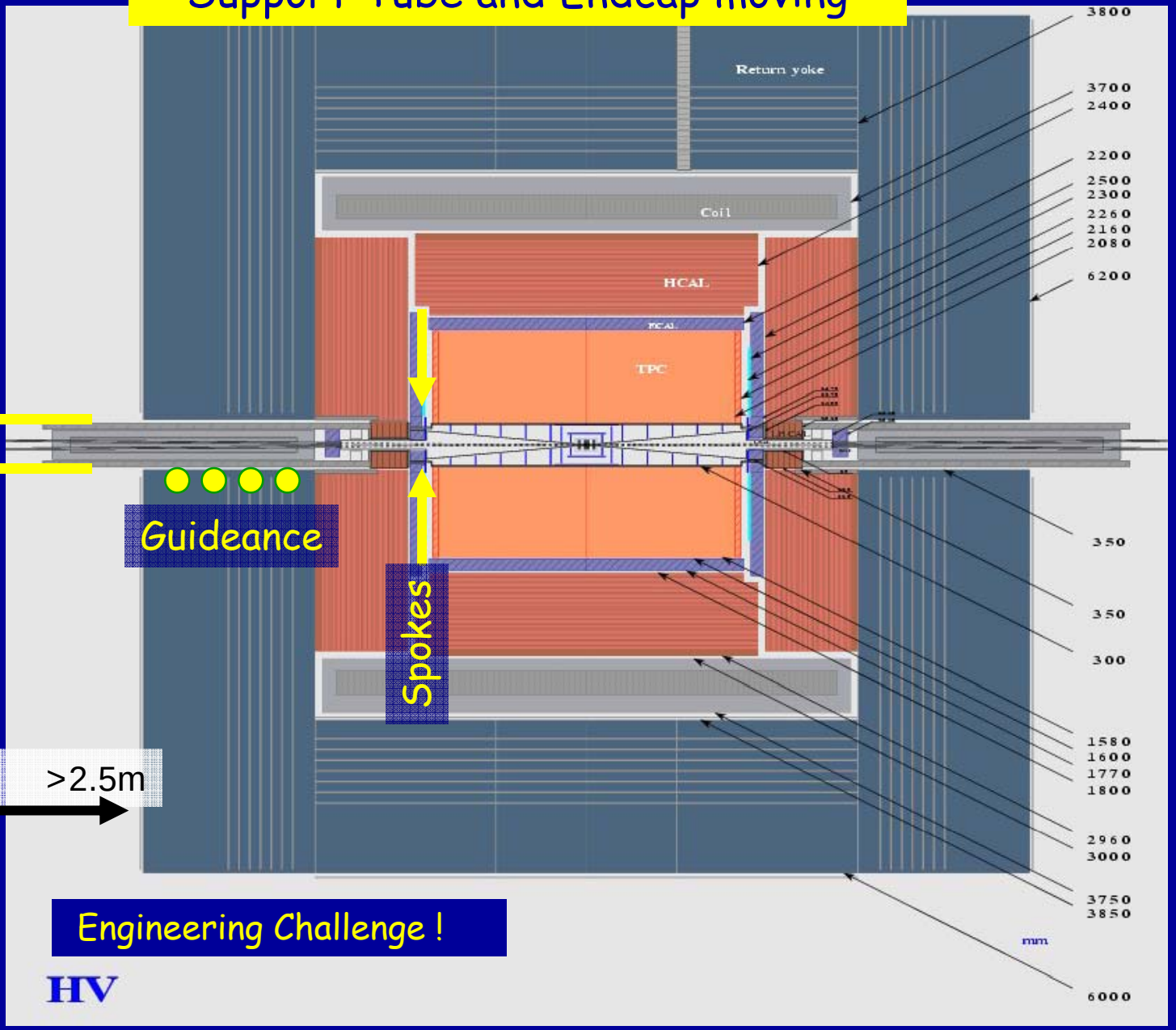


Opening for VTX access

Vacuum is kept!



Support Tube and Endcap moving



Guideance

Spokes

Pillar

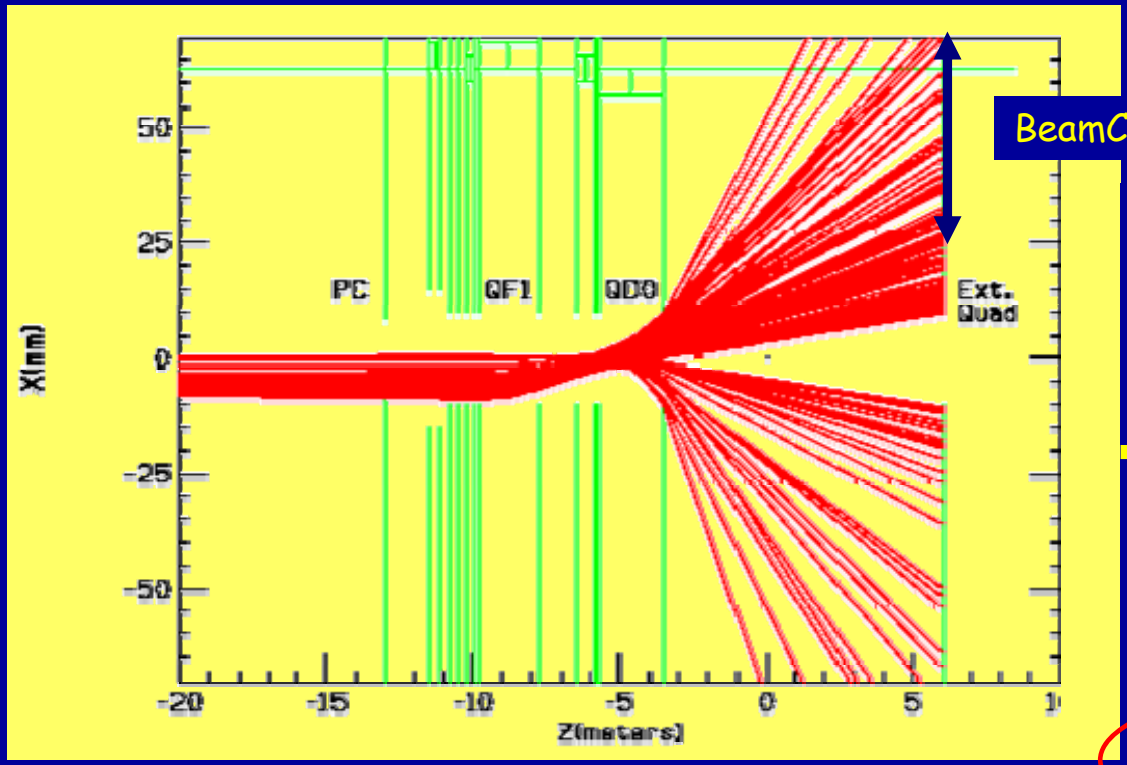
>2.5m

Engineering Challenge !

HV

Vacuum and Background Issues

beam-gas interactions



average energy: 100 GeV!
origin: 200 m from IP

Vacuum: 10 nT out to 200 m

→

0.02-0.04 electrons/BX

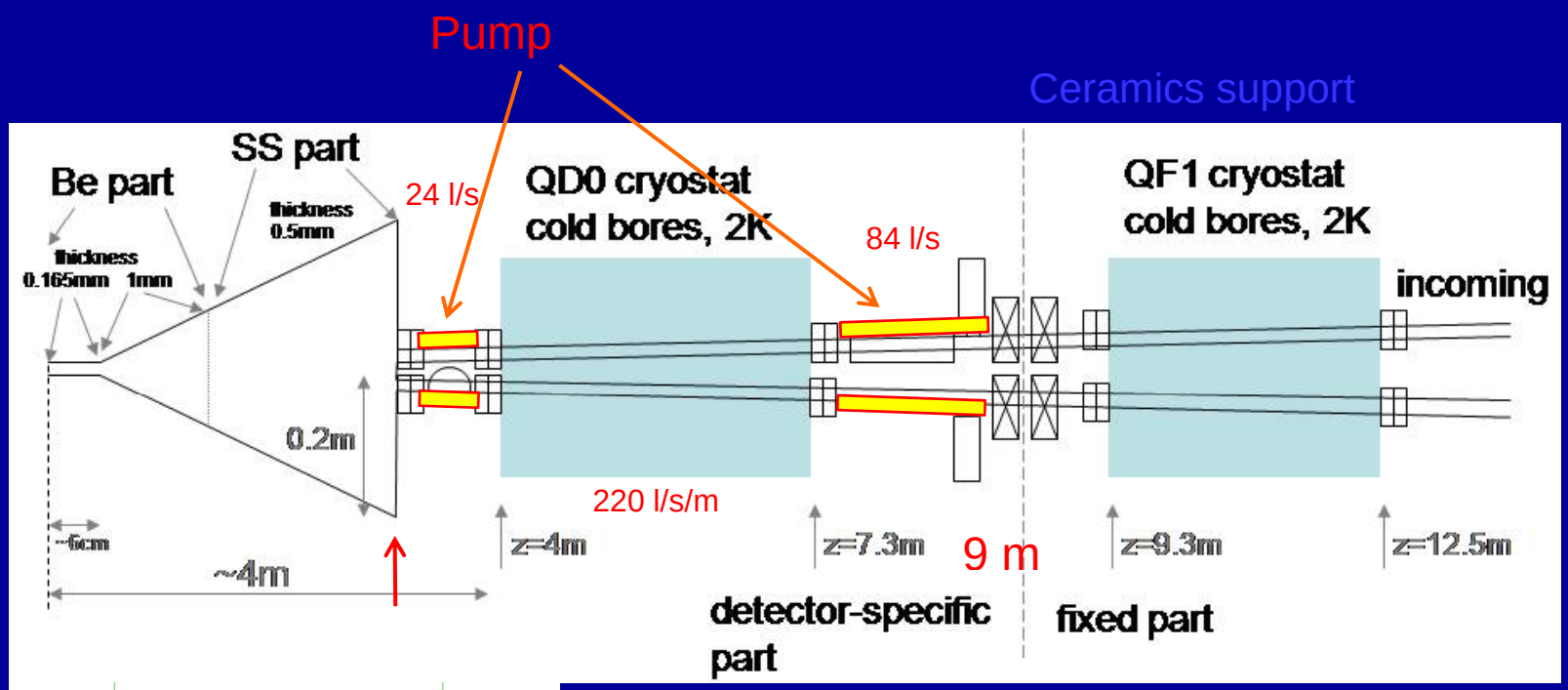
Conservative estimate:

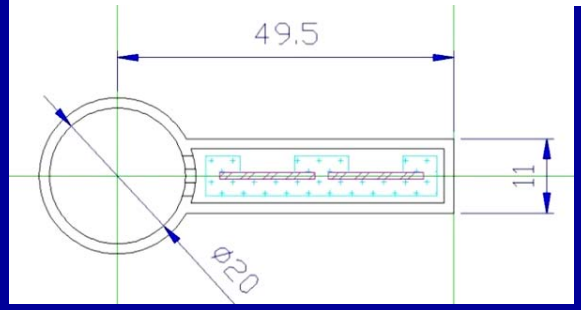
1 nT in +- 200 m from IP
(limit hits in the VTX)

Vacuum near the IP: less critical, since 0.5 $\gamma\gamma$ events per BX (2 mb)
1 - 10 nT between +- L^*

(L. Keller)

If no pump at cone region (z < L*)
NEG pump just before QD0

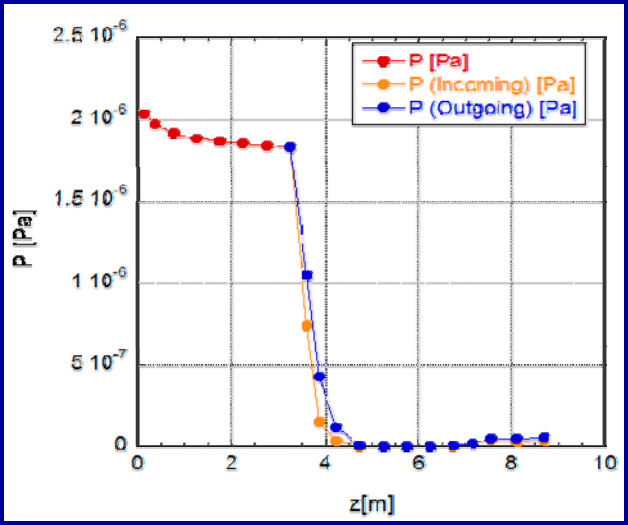




(Y. Suetsugu, O. Malyshev)

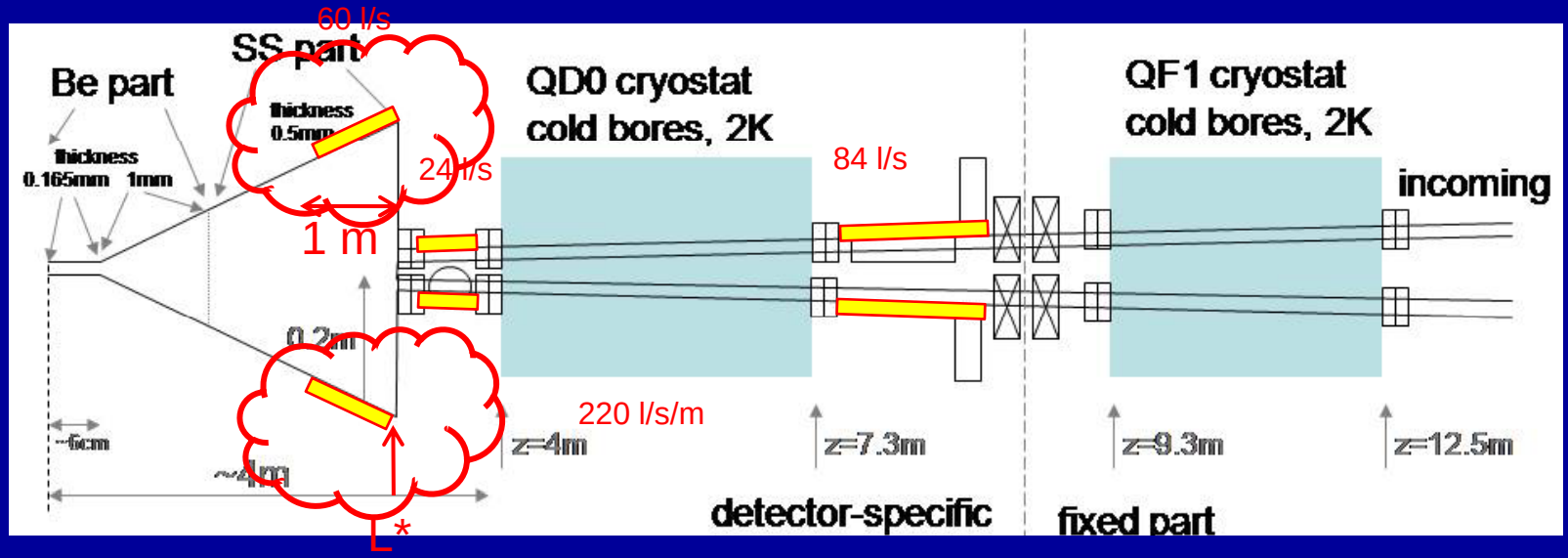
Vacuum Issues

simulation:

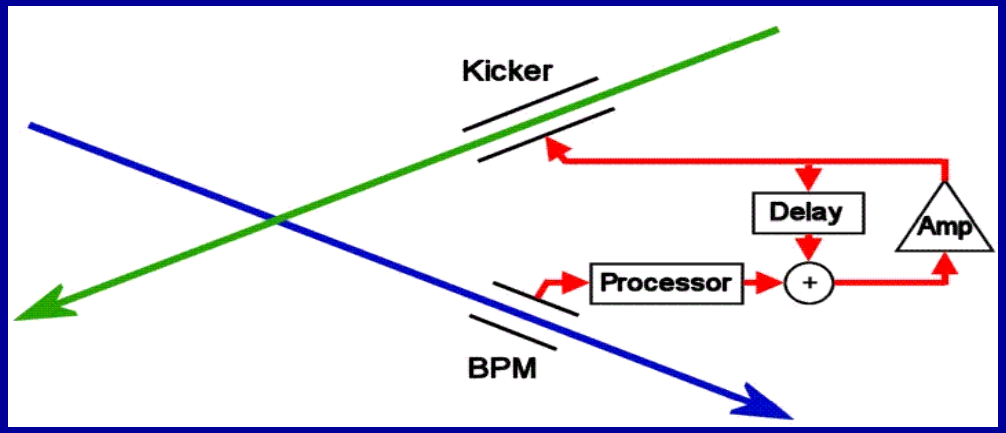


Pump in the cone region
is needed !

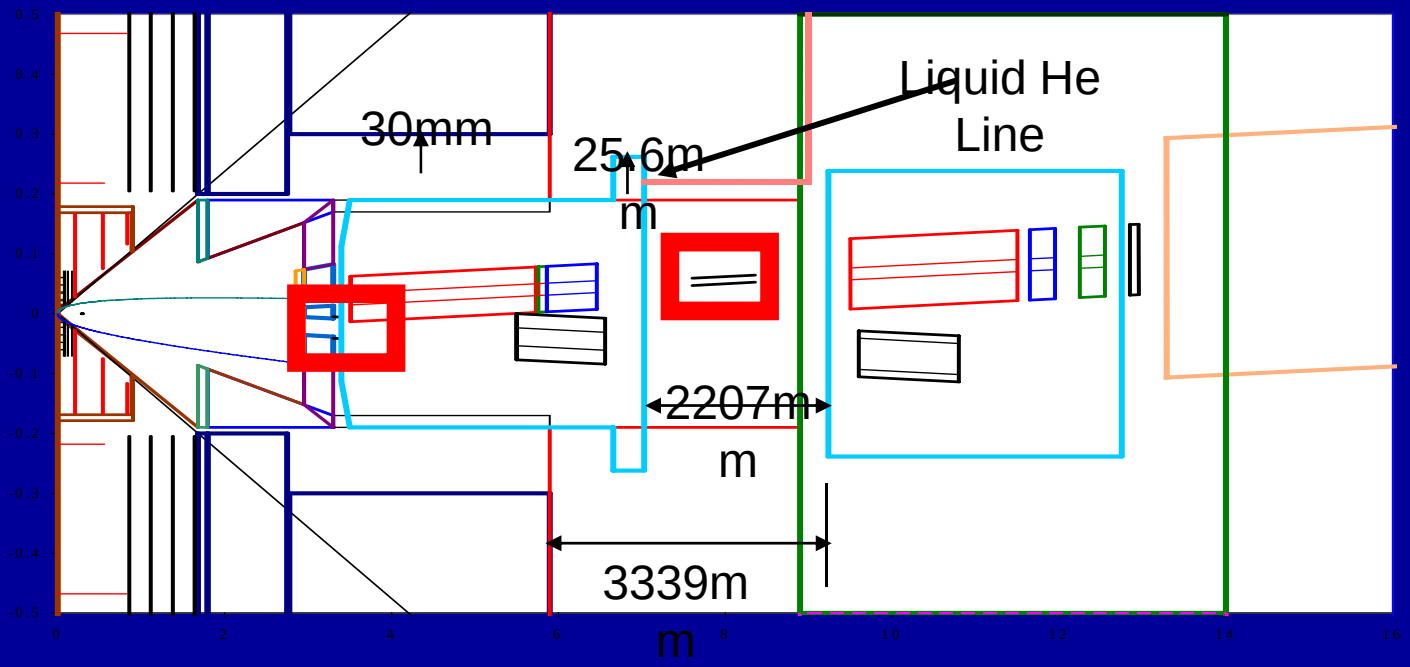
Revised proposal:
Fulfills the pressure requirements,
but:
-Material in front of ECAL
-NEG pumps need baking (250^0 C)



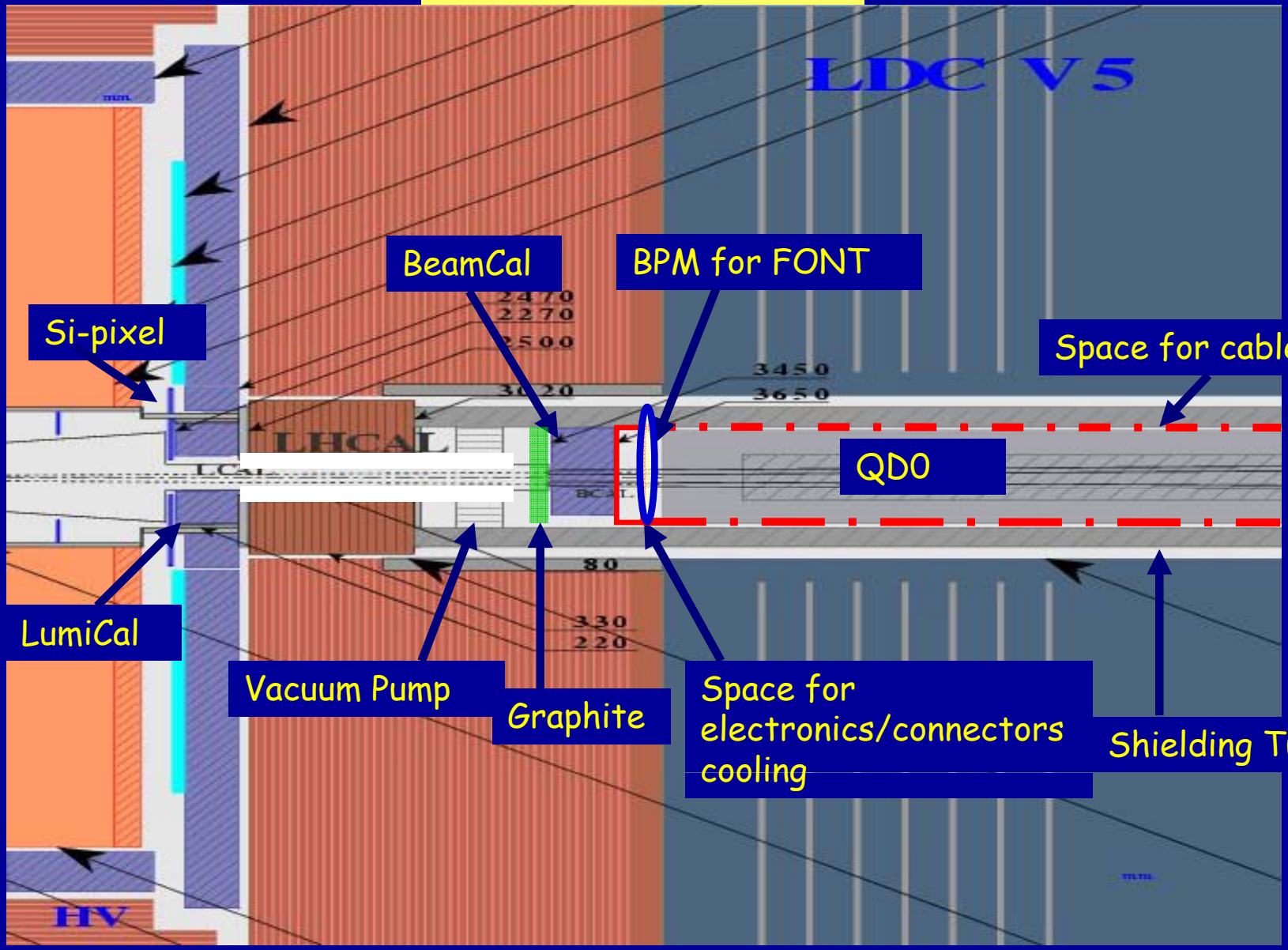
Fast feedback, FONT



Solution for SiD



Forward Region



Other Issues

- Size of the Underground area
- Air Pads vs Platform for Detector Movement
- Impacts of Schedule on the RDR Base Design
  - -Surface Assembly of Detectors
  - -Implications of Below Ground Detector Assembly
- Requirements for Shielding Walls in the Interaction Region Radiation Safety
- Cryo Supply to Detectors
- Other Services Required for Detectors
- Crossing Angles & Beam-dumps
- Look under:

http://www-conf.slac.stanford.edu/ireng07/

How to proceed (A. Seryi)

- Work before the IRENG07 workshop
  - was very important
- Work at the workshop
  - A lot of extremely useful information
  - Many options for design optimization
  - In many cases suggestions of plans for further studies were discussed
- Further work
  - develop interface document (s) to describe parameters, solutions, responsibilities
  - to develop plans for EDR work to carry out studies needed to improve the design
  - keep working together on these studies