BDS updates

Previous update – August 20, 2007

SLAC 1:30 Monday meeting

Andrei Seryi

November 5, 2007

What's new since Aug.20

- ATF2 construction
  - **photos from constructions (thanks to N.Toge)**
  - **preparation for December trip**
  - **magnets preparation**
- IRENG07
- ALCPG07
  - **put together work packages**

- ATF2 construction slide show

ATF hall before ATF2 construction

ATF hall emptied

Photos from ATF2 construction, N.Toge

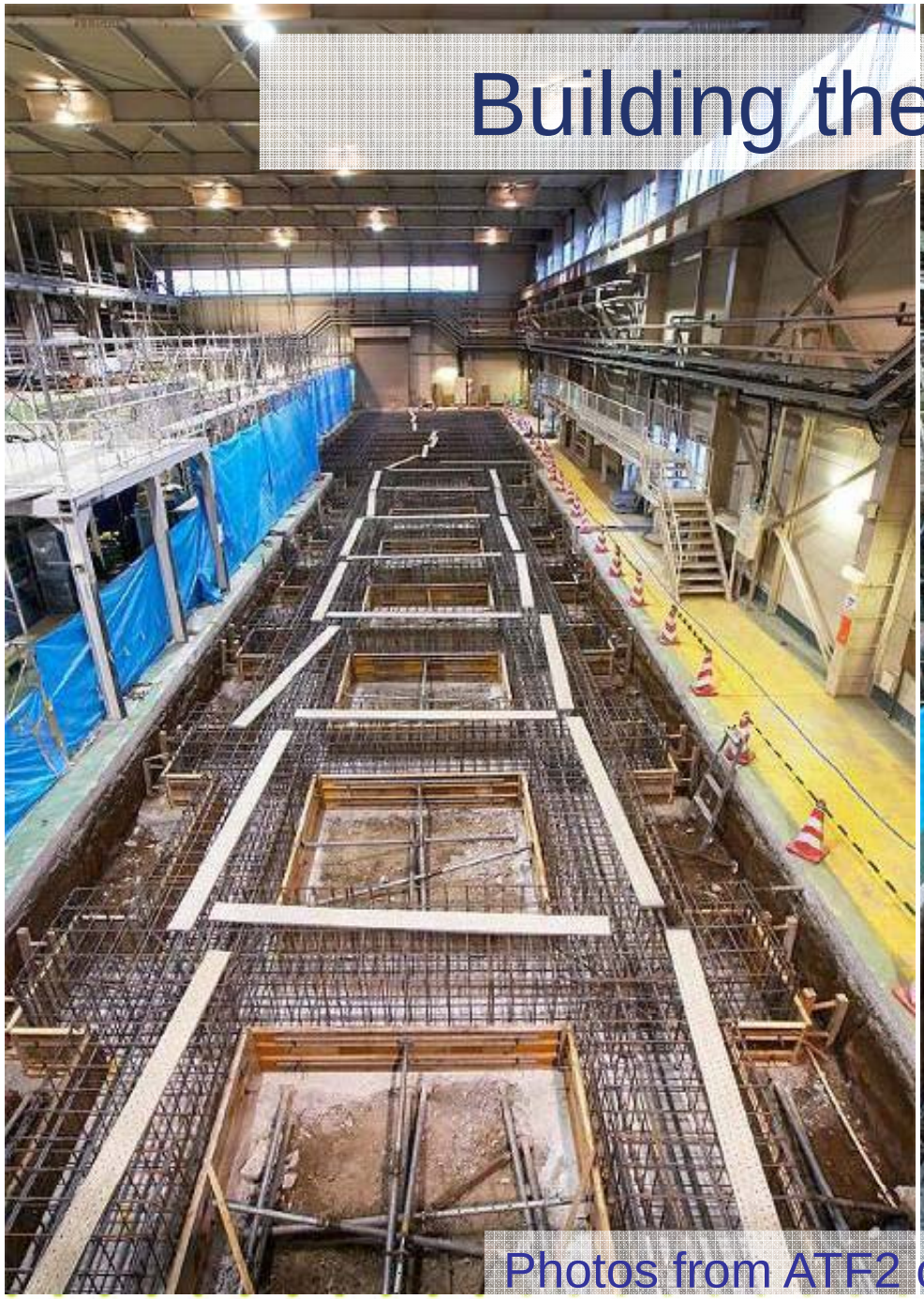
Build pillars for reinforced floor

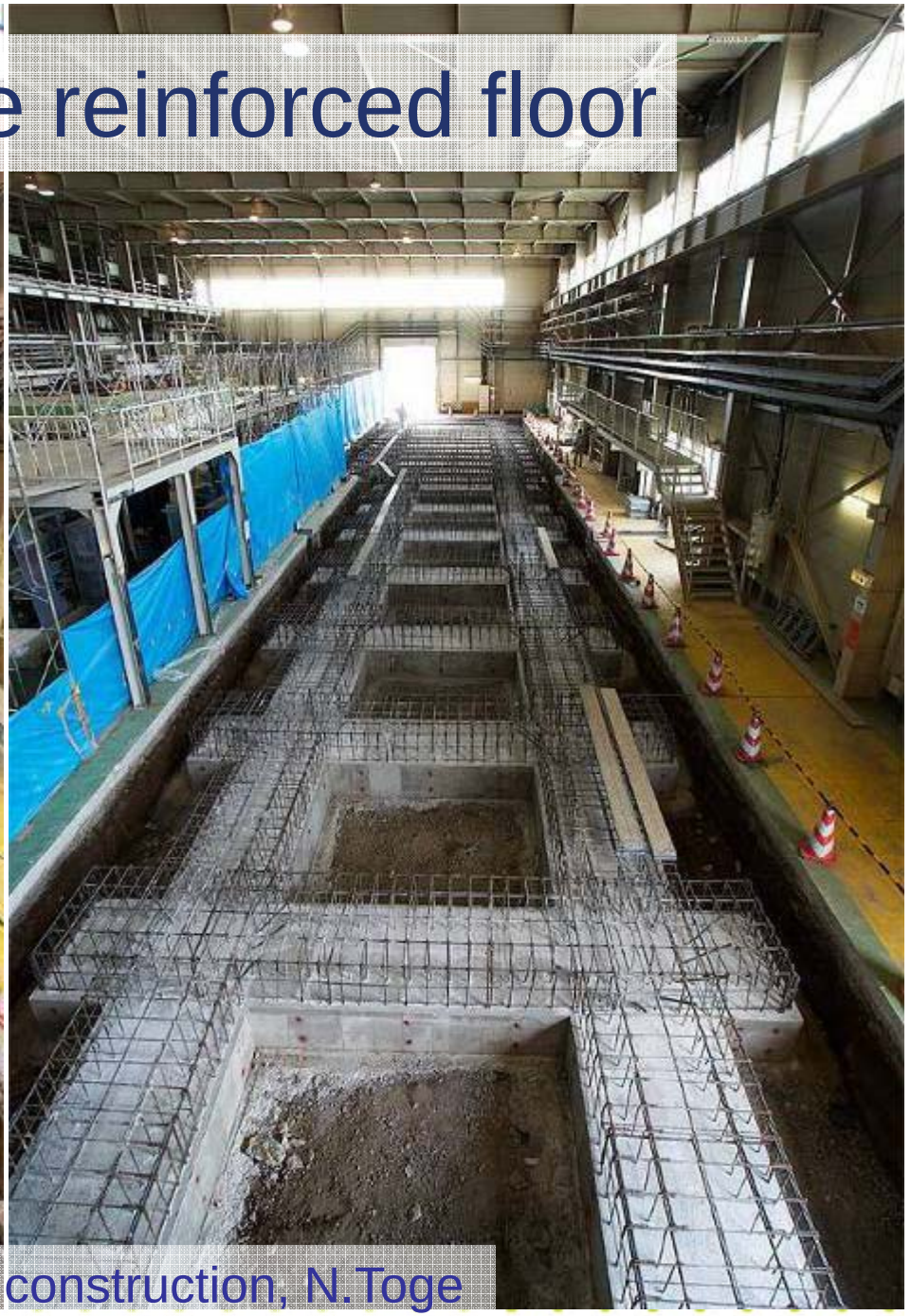
Photos from ATF2 construction, N.Toge

Build pillars for reinforced floor

Photos from ATF2 construction, N.Toge

Building the reinforced floor





Photos from ATF2 construction, N.Toge

Finishing the reinforced floor for ATF2

Photos from ATF2 construction, N.Toge

Finished reinforced floor for ATF2

Photos from ATF2 construction, N.Toge

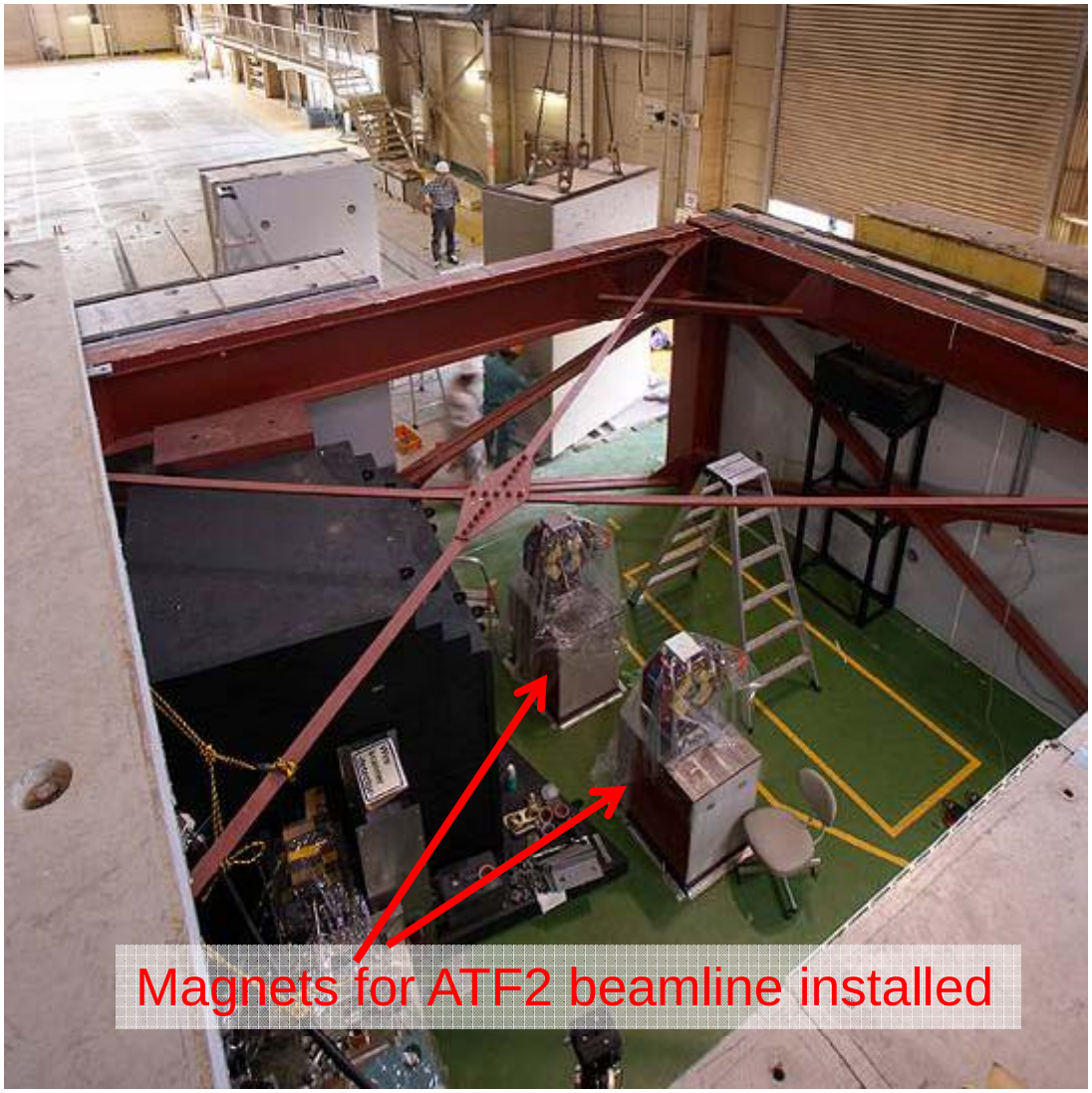
Prepare ATF2 shielding construction

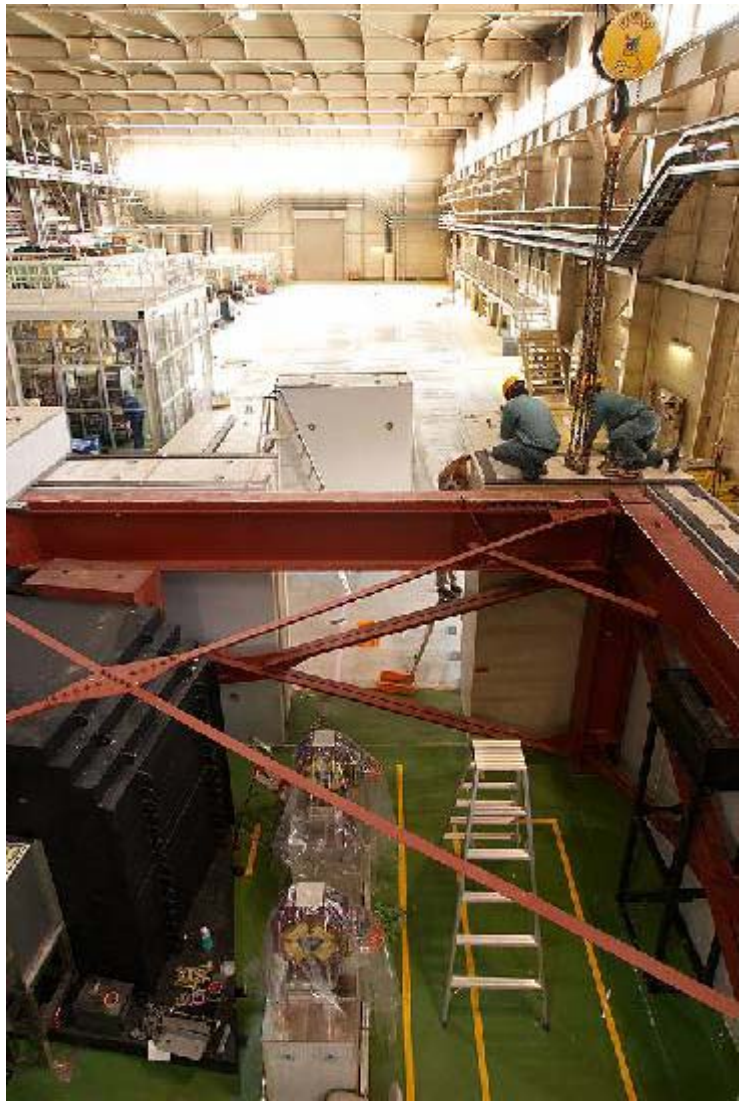
Photos from ATF2 construction, N.Toge

Shielding construction at ATF2

Photos from ATF2 construction, N.Toge

Shielding construction at ATF2





Photos from ATF2 construction, N.Toge

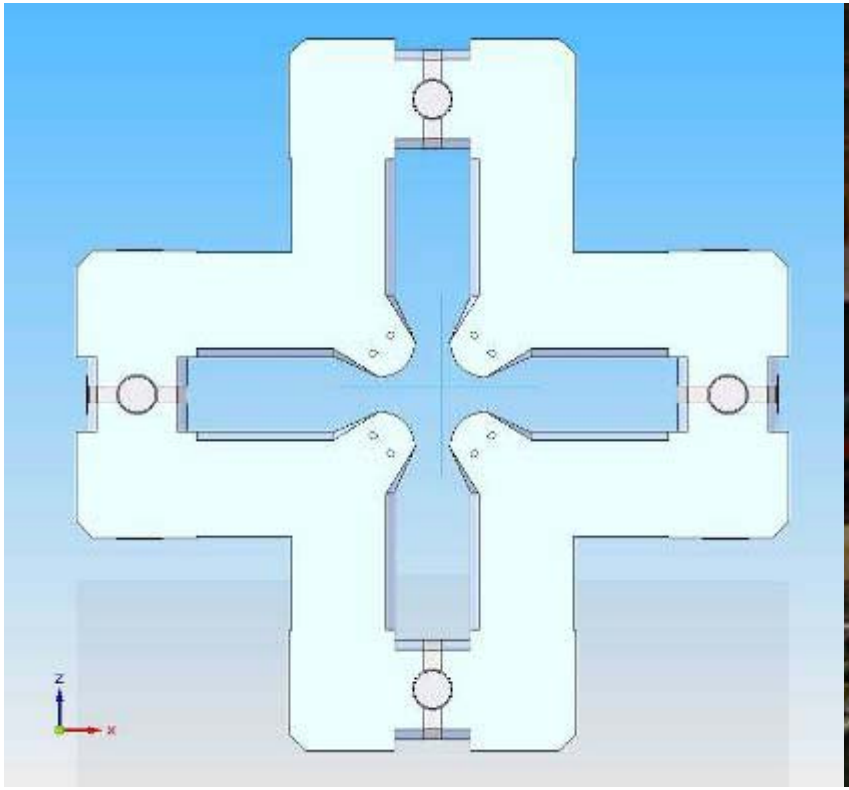
Shielding construction at ATF2

Photos from ATF2 construction, N.Toge

Magnet status

- FD quads
  - **shims inserted to increase aperture**
  - **reassembled**
  - **buttons to correct 12 pole manufactured**
  - **preparing for iterative magnetic measurements and optimization of button size and position**
- Sextuples for FD
  - **cooling circuits (2nd improved version) being manufactured**
- Integration of FD
  - **will being done by Annecy**
- Bends for FF
  - **manufactured in IHEP, measurements analyzed**

Modification of QC3 for ATF2 FD

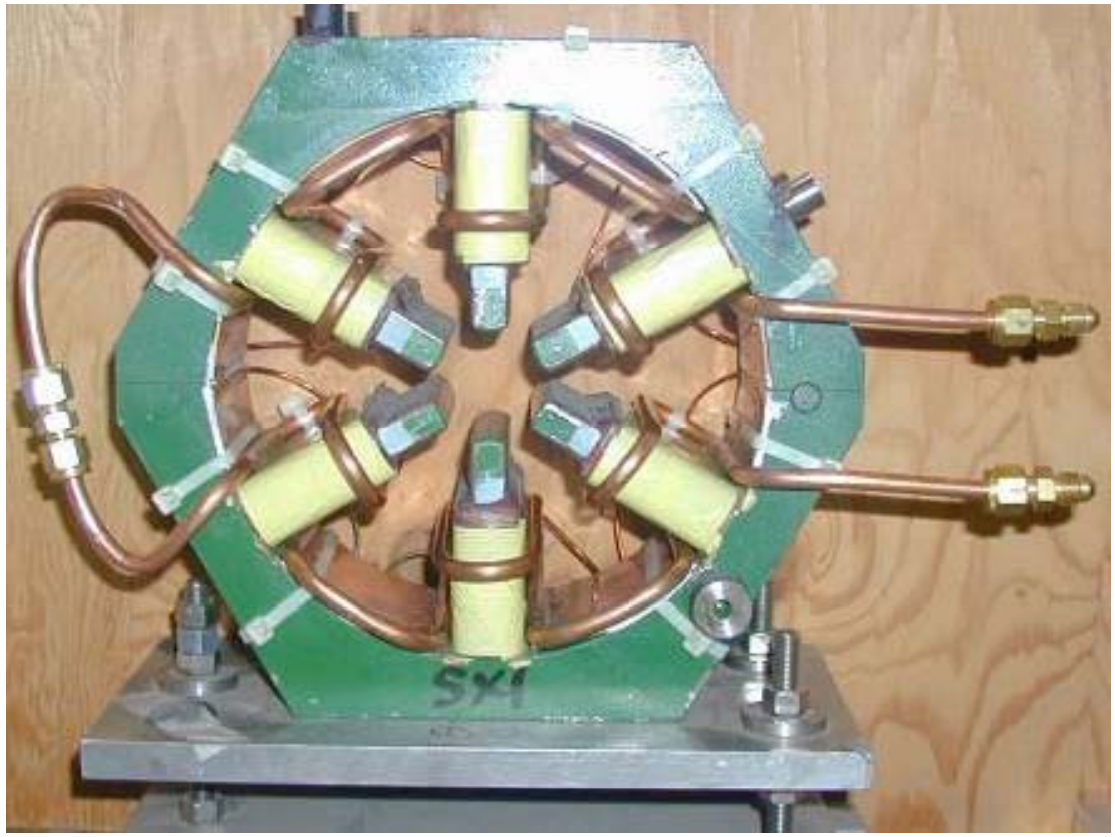


Cherrill Spencer

Shims added at split plane

Next: measurements & correction of 12th pole with buttons

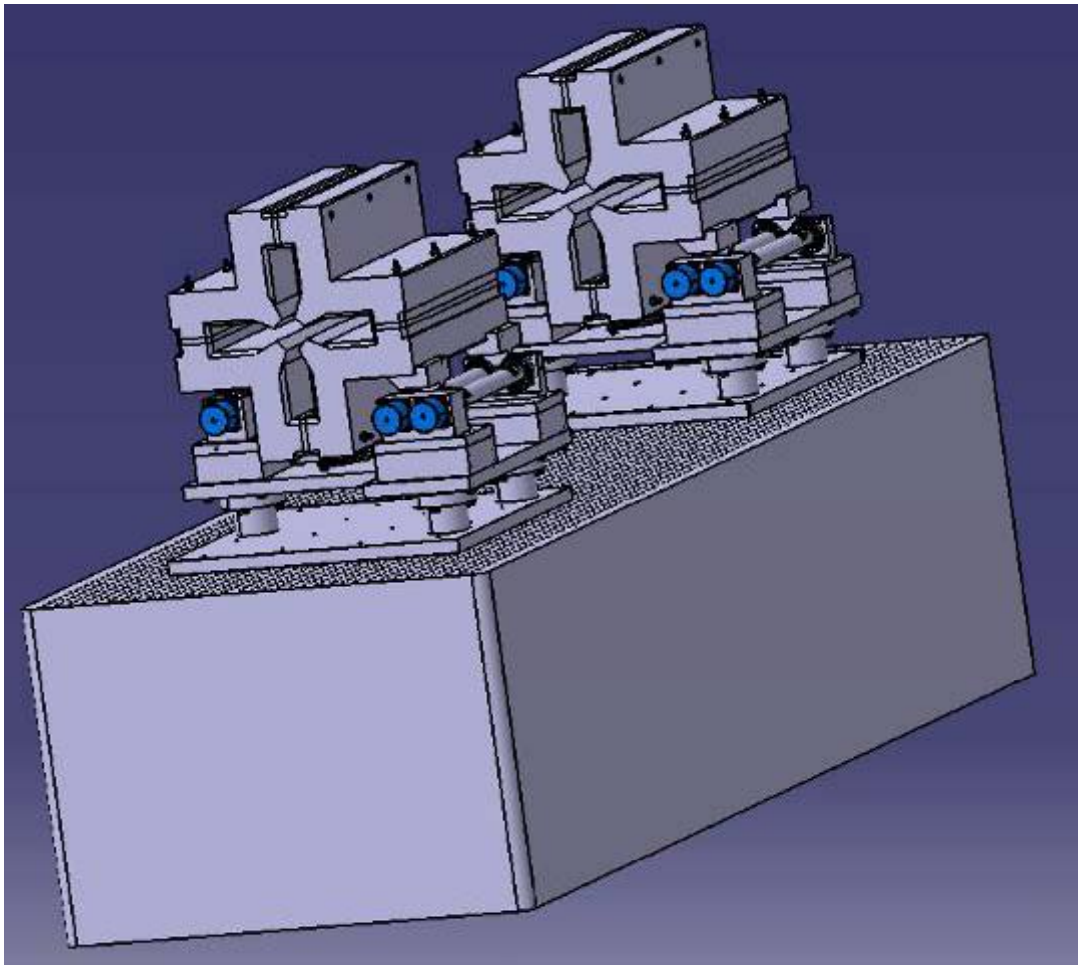
Modification of sextupoles for FD



Cherrill Spencer

- Water cooling circuit was added and tested
- It is being modified now to increase thermal contact with the coil
- Second cooling circuit then will be also made, for second FD sextupole
- (Sextupoles are at KEK and planned to be shipped to Annecy for FD integration)

Integration of FD in Annecy



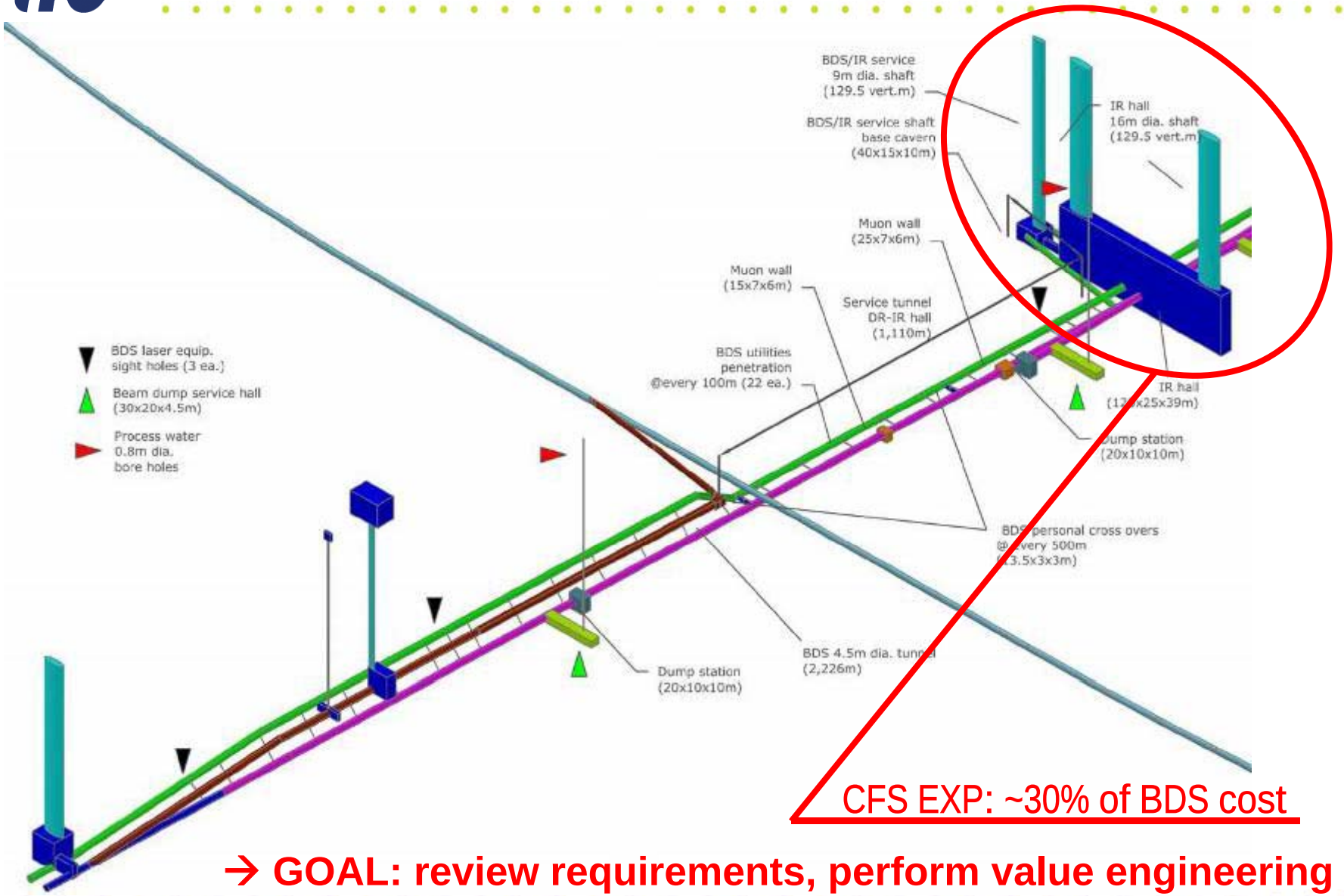
- Integration of ATF2 Final Doublet will be done in LAPP, Annecy
- Trying to fit to schedule to make it possible to ship QC3s to LAPP
- Assembled FD to be sent to KEK in May-June 2008

A.Jeremie, B.Bolzon, N.Geffroy, LAPP

December trip to KEK

- Ring BPM electronic work – with FNAL
- Extraction line emittance measurements – with many European colleagues
- TBT orbit data and analysis
- Mover software checks
- …

IRENG07 motivations



→ GOAL: review requirements, perform value engineering

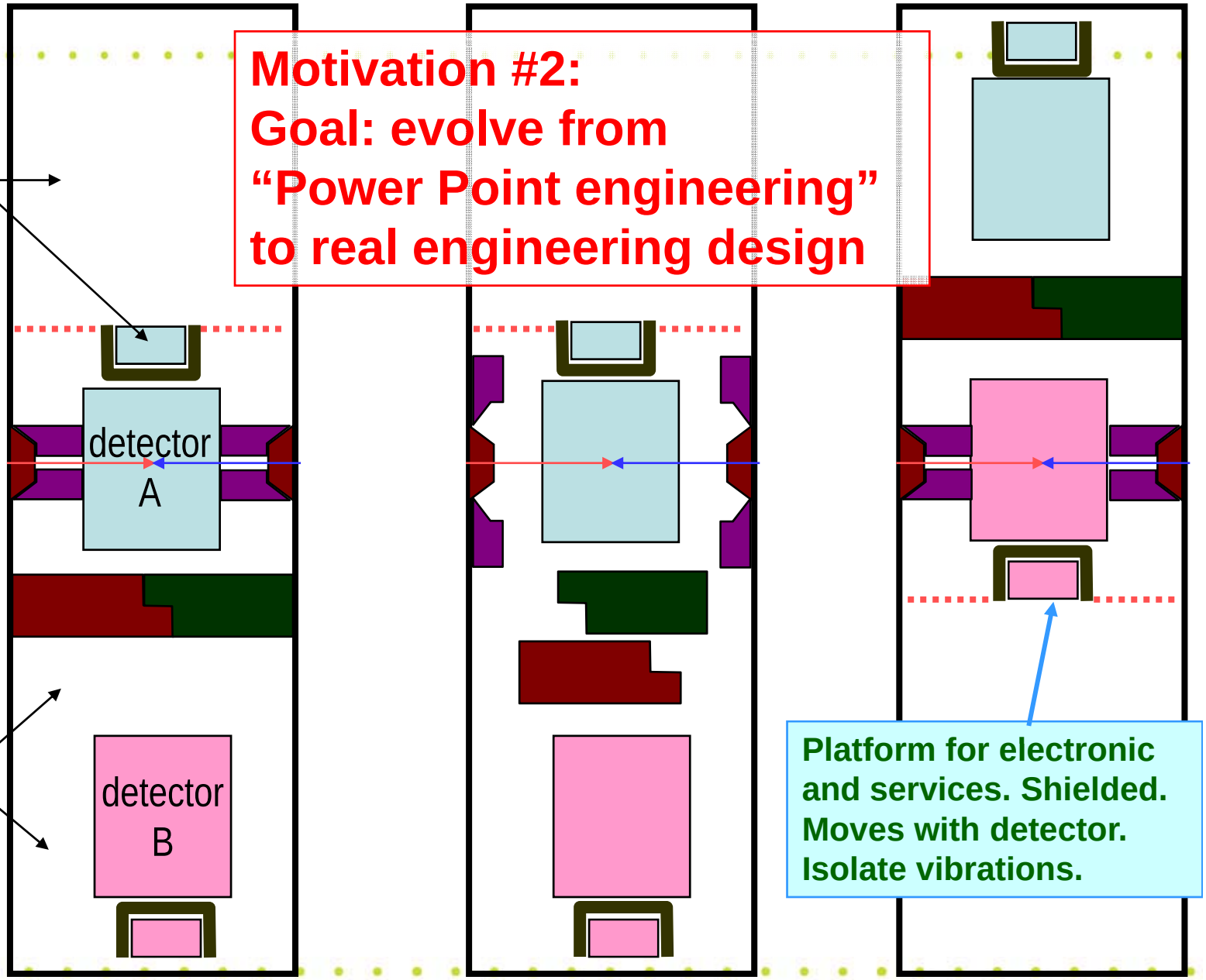
Concept of single IR with two detectors

Motivation #2:
Goal: evolve from
"Power Point engineering"
to real engineering design

may be accessible during run

Slide as of ~Oct 2006

accessible during run

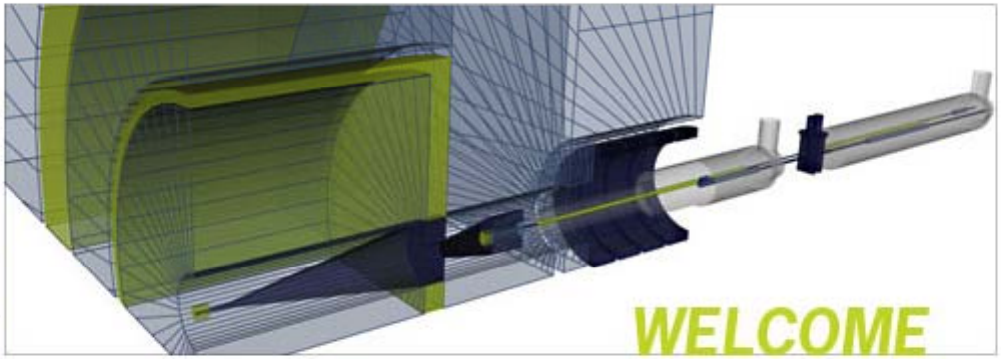


Platform for electronic and services. Shielded. Moves with detector. Isolate vibrations.

IRENG07 Workshop

ILC INTERACTION REGION ENGINEERING DESIGN WORKSHOP — SLAC

- Home
- Goals
- Registration
- Payment Information
- Agenda
- Organizing Committees
- The Charge to the IPAC
- Accommodations
- Travel and Directions
- Visa Information
- Social Events
- Contact



ILC Interaction Region Engineering Design Workshop

September 17-21, 2007

Stanford Linear Accelerator Center

Menlo Park, California

Please join us to review and advance the design of the subsystem of the Interaction Region of ILC, focusing in particular on their integration, engineering design and arrangements for push-pull operation.

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

RECENT NEWS

- **Agenda has been updated.**

REGISTRATION

Registration is necessary to participate in the workshop.
Registration fee is $30 and reception fee is $20.

→ **Register**

ACCOMMODATIONS

A block of 40 rooms is reserved until July 15, 2007 at the **Stanford Guest House**. Please reserve your room early and mention that you are attending this workshop.

→ **More Information**

Graphics logo based on generic IR design made by John Amann, SLAC

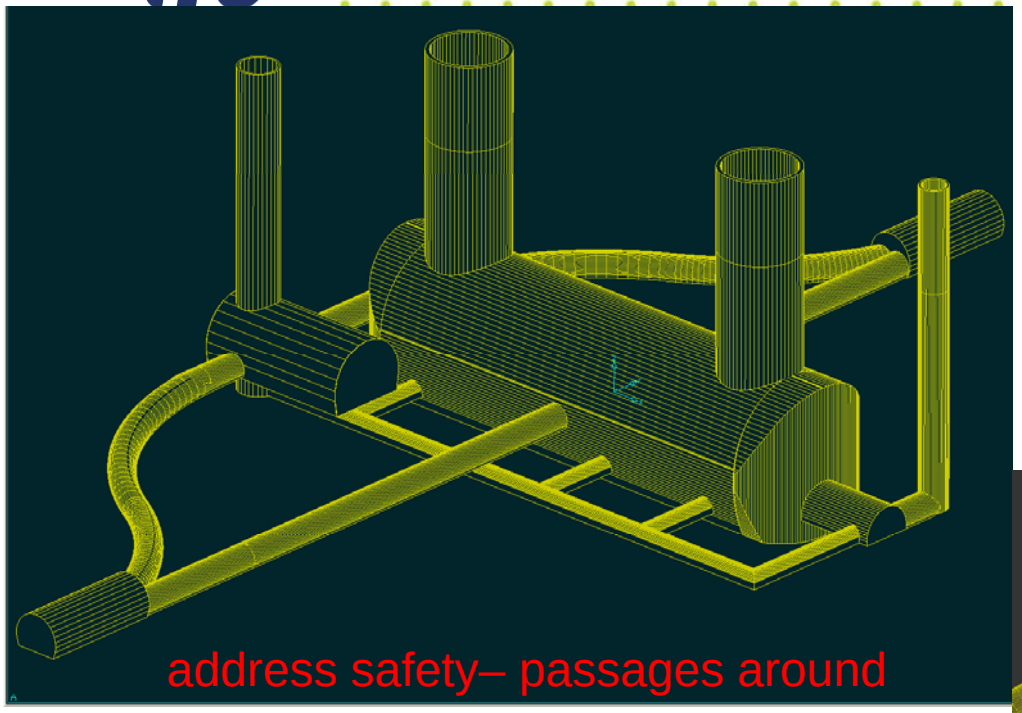
Work in preparation for IRENG07

- **WG-A: Overall detector design, assembly, detector moving, shielding.**
  - **Including detector design for on-surface assembly and underground assembly procedures. Beamline pacman & detector shielding…**
    - **Conveners: Alain Herve (CERN), Tom Markiewicz (SLAC), Tomoyuki Sanuki (Tohoku Univ.), Yasuhiro Sugimoto (KEK)**
- **WG-B: IR magnets design and cryogenics system design.**
  - **Including cryo system, IR magnet engineering design, support, integration with IR, masks, Lumi & Beamcals, IR vacuum chamber...**
    - **Conveners: Brett Parker (BNL), John Weisend (SLAC/NSF), Kiyosumi Tsuchiya (KEK)**
- **WG-C: Conventional construction of IR hall and external systems.**
  - **Including lifting equipment, electronics hut, cabling plant, services, shafts, caverns, movable shielding; solutions to meet alignment tolerances...**
    - **Conveners: Vic Kuchler (FNAL), Atsushi Enomoto (KEK), John Osborne (CERN)**
- **WG-D: Accelerator and particle physics requirements.**
  - **Including collimation, shielding, RF, background, vibration and stability and other accelerator & detector physics requirements…**
    - **Conveners: Deepa Angal-Kalinin (STFC), Nikolai Mokhov (FNAL), Mike Sullivan (SLAC), Hitoshi Yamamoto (Tohoku Univ.)**

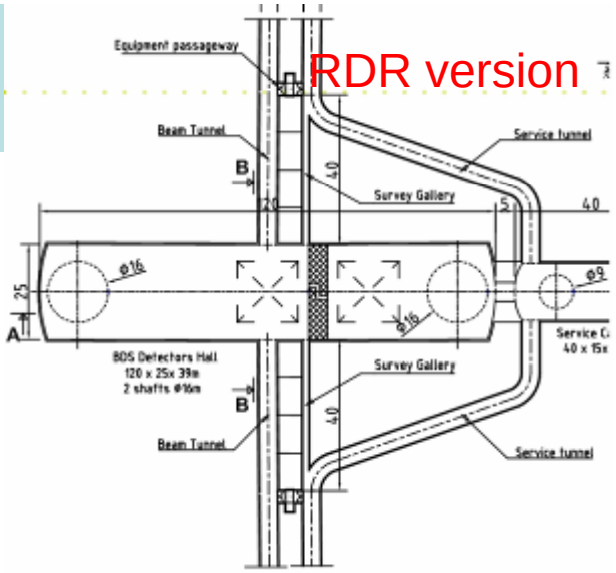
- WG-A, conveners meeting, July 5
- WG-D, conveners meeting, July 11
- WG-A, group meeting, July 12
- WG-B, conveners meeting, July 13
- WG-C, group meeting, July 17
- WG-B, group meeting, July 23
- WG-C, group meeting, July 24
- WG-A, group meeting, July 30
- WG-C, group meeting, July 31
- WG-D, group meeting, August 1
- WG-B, group meeting, August 2
- WG-A, group meeting, August 6
- WG-C, group meeting, August 7
- WG-A, group meeting, August 13
- WG-D, group meeting, August 15
- WG-B, group meeting, August 16
- WG-A, group meeting, August 20
- WG-C, group meeting, August 21
- WG-A, group meeting, August 27
- WG-C, group meeting, August 28
- Conveners and IPAC mtg, August 29
- WG-B, group meeting, August 30
- WG-B, group meeting, September 13


ILC Interaction Region Engineering Design Workshop
September 17-21, 2007
Stanford Linear Accelerator Center

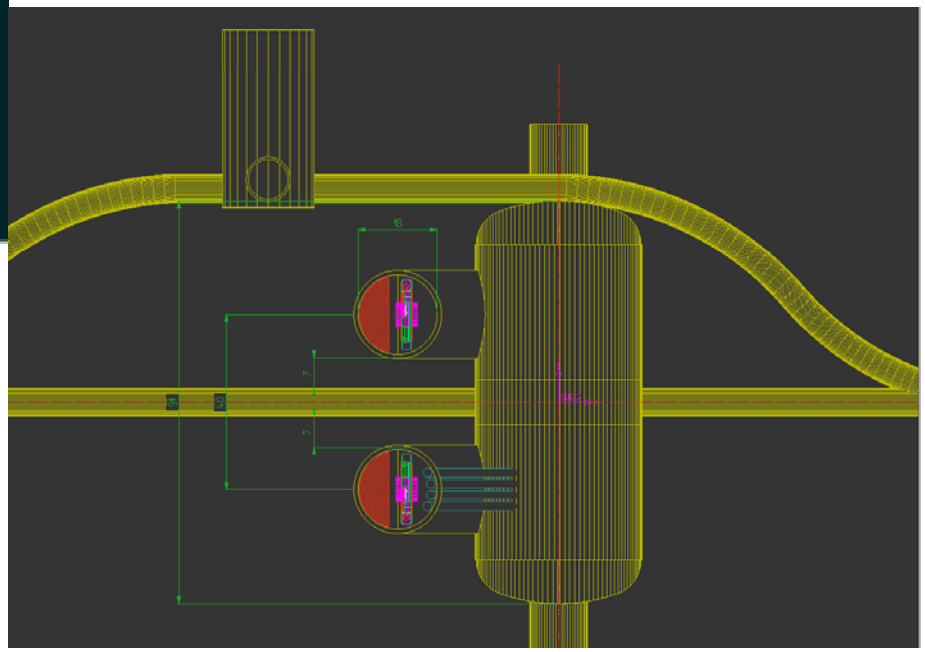
Explore optimization of IR arrangements during IRENG07 workshop



address safety– passages around



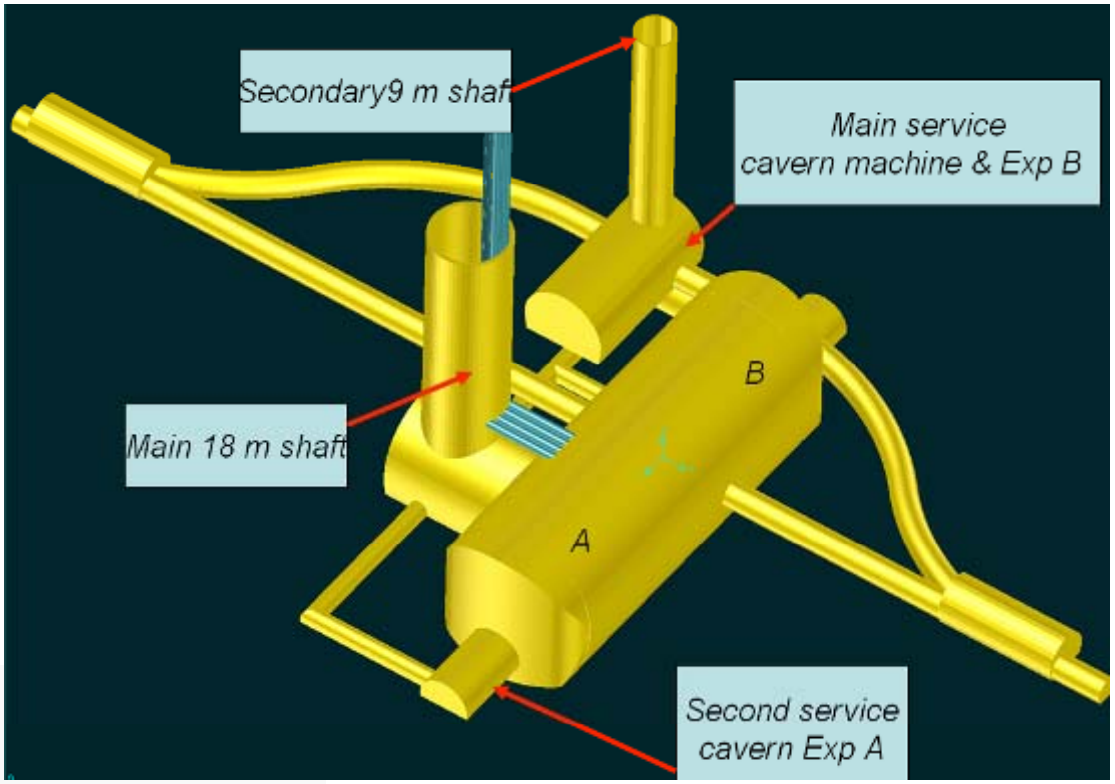
RDR version

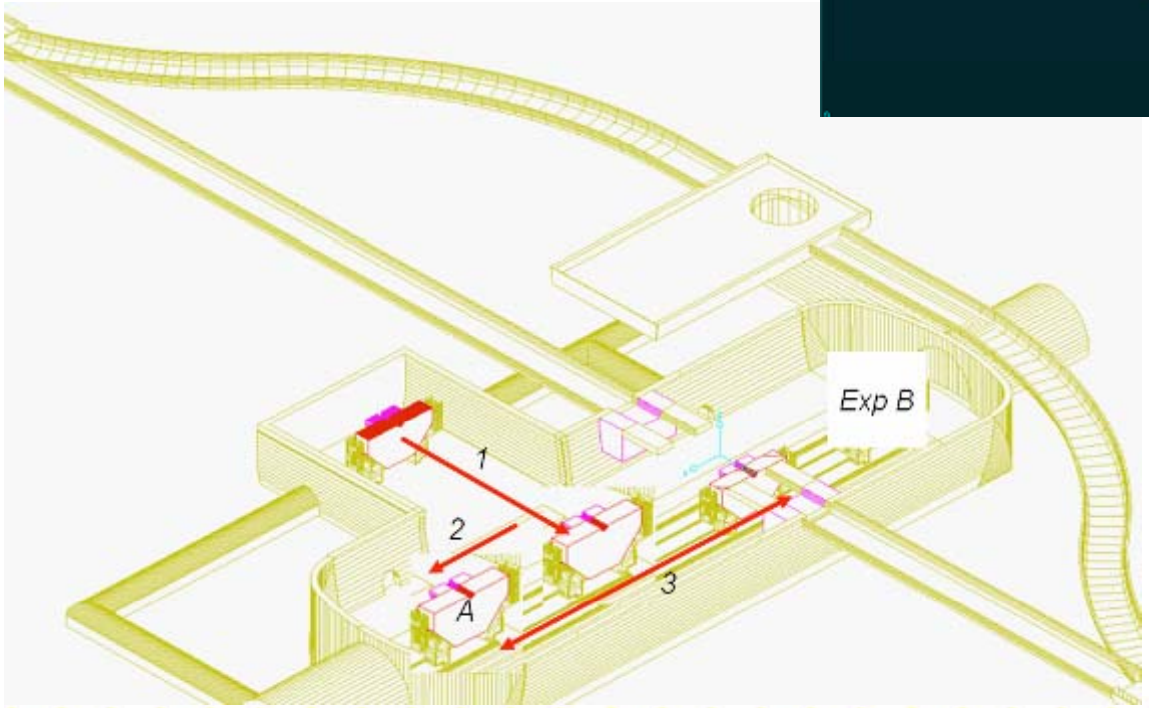


address safety and interference – offset the shafts

Optimization was possible due to work of IRENG07 participants, conveners, CFS group and in particular CERN's Alain Herve, John Osborne and their colleagues

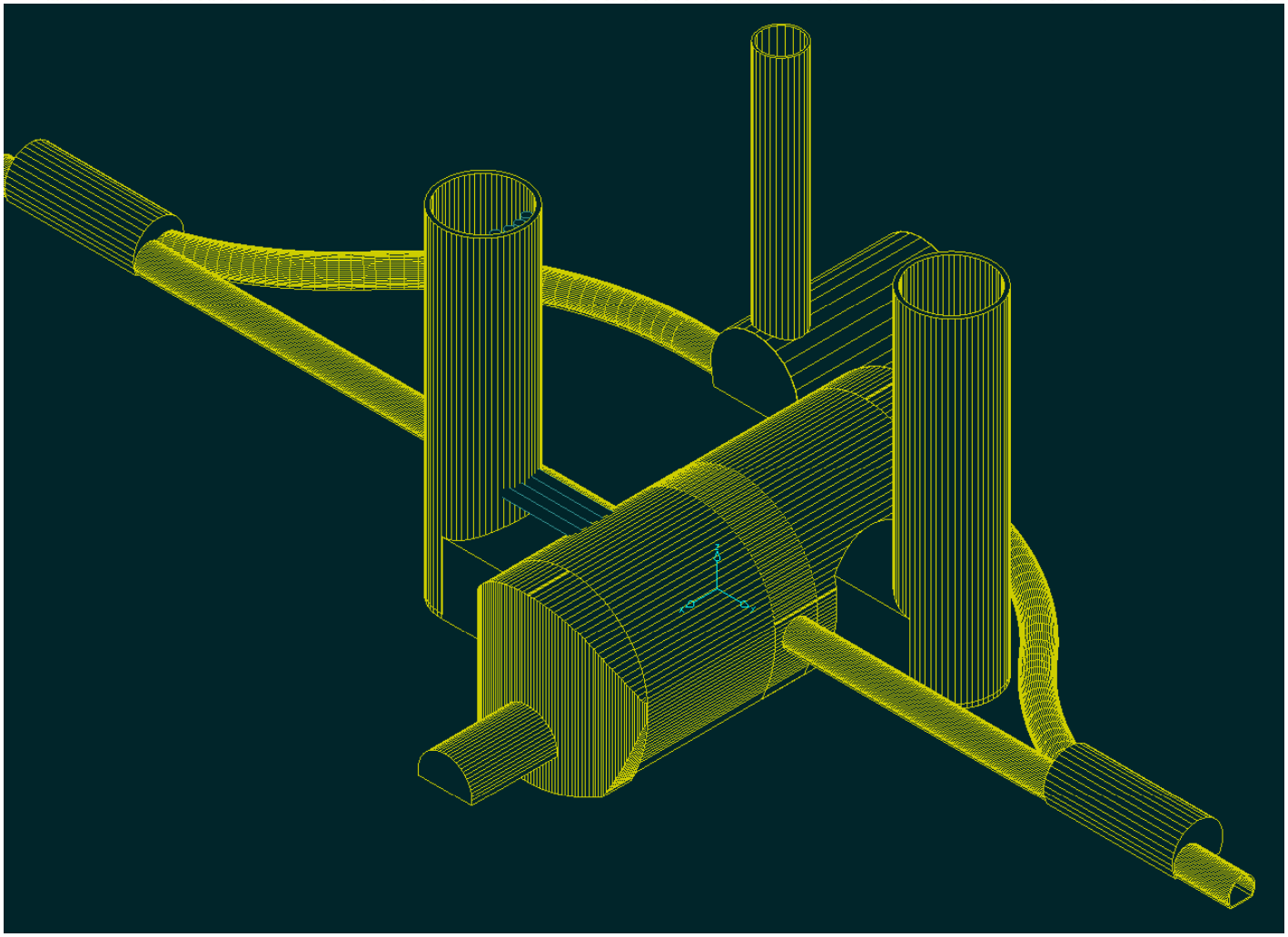
Single detector access shaft





Was considered as value engineering exercise. Was found in principle possible. However it would create disadvantages for one of experiments and severe interference between them.

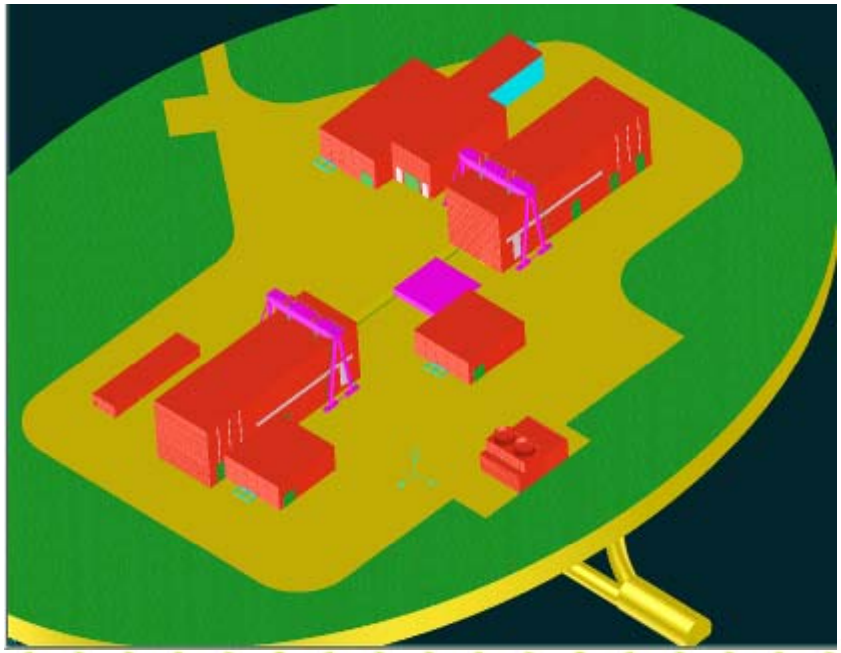
To be considered as an alternative for IR layout during EDR:



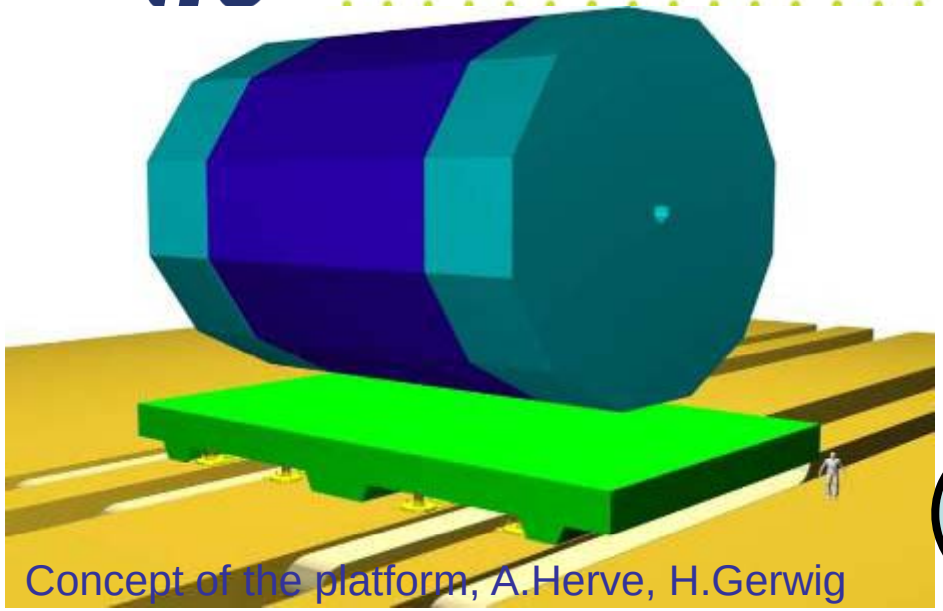
Two shafts offset from the main cavern on the diagonal, to address interferences (in safety and schedule) between loading/unloading areas and working areas

Optimization of surface buildings

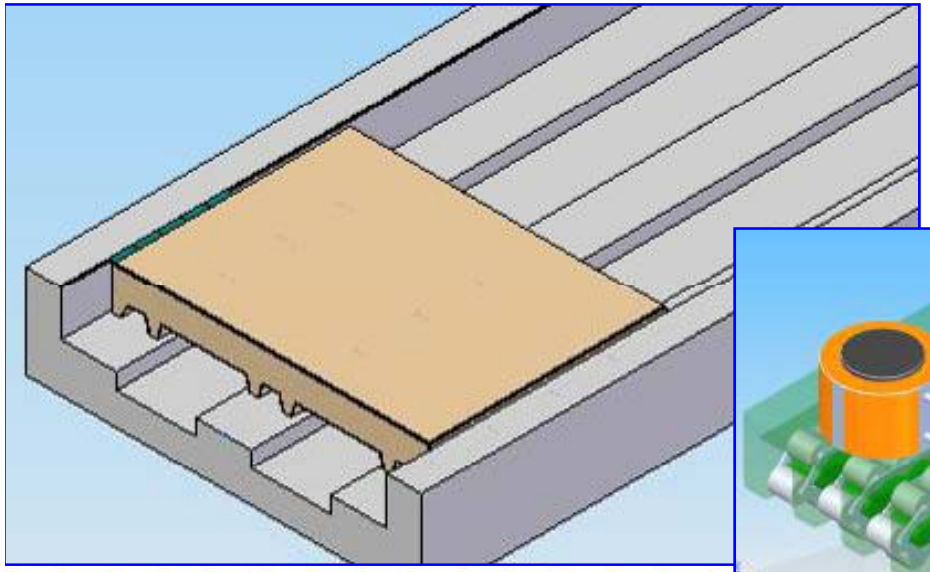
Considering common or independent building for surface assembly of two detectors. Shared or independent rented gantry cranes, shared shaft cover, etc.

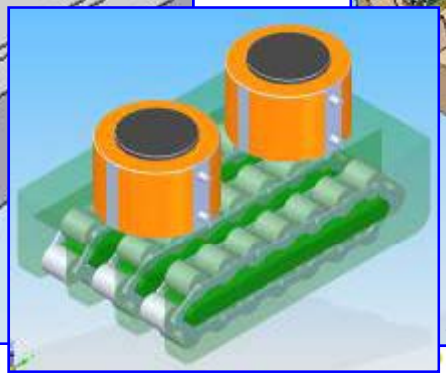


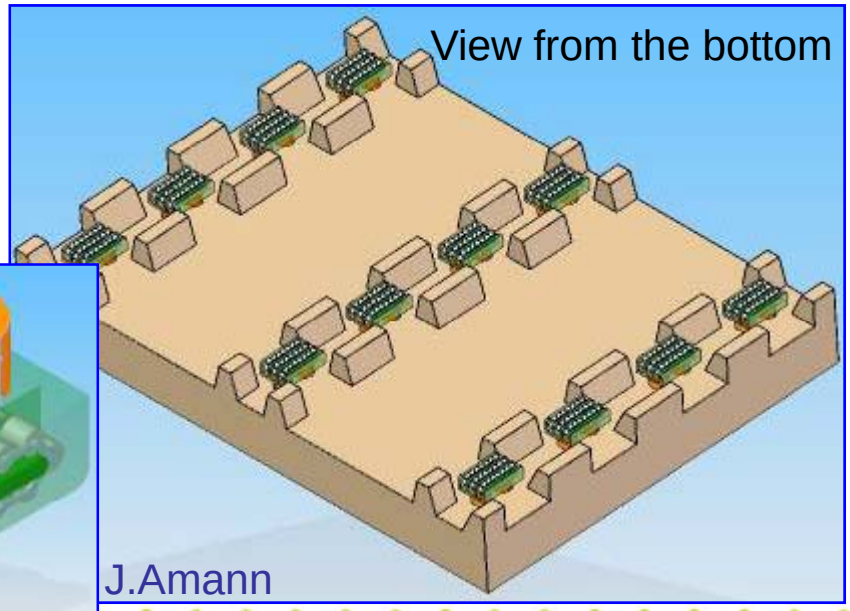
Moving the detector



Concept of the platform, A.Herve, H.Gerwig

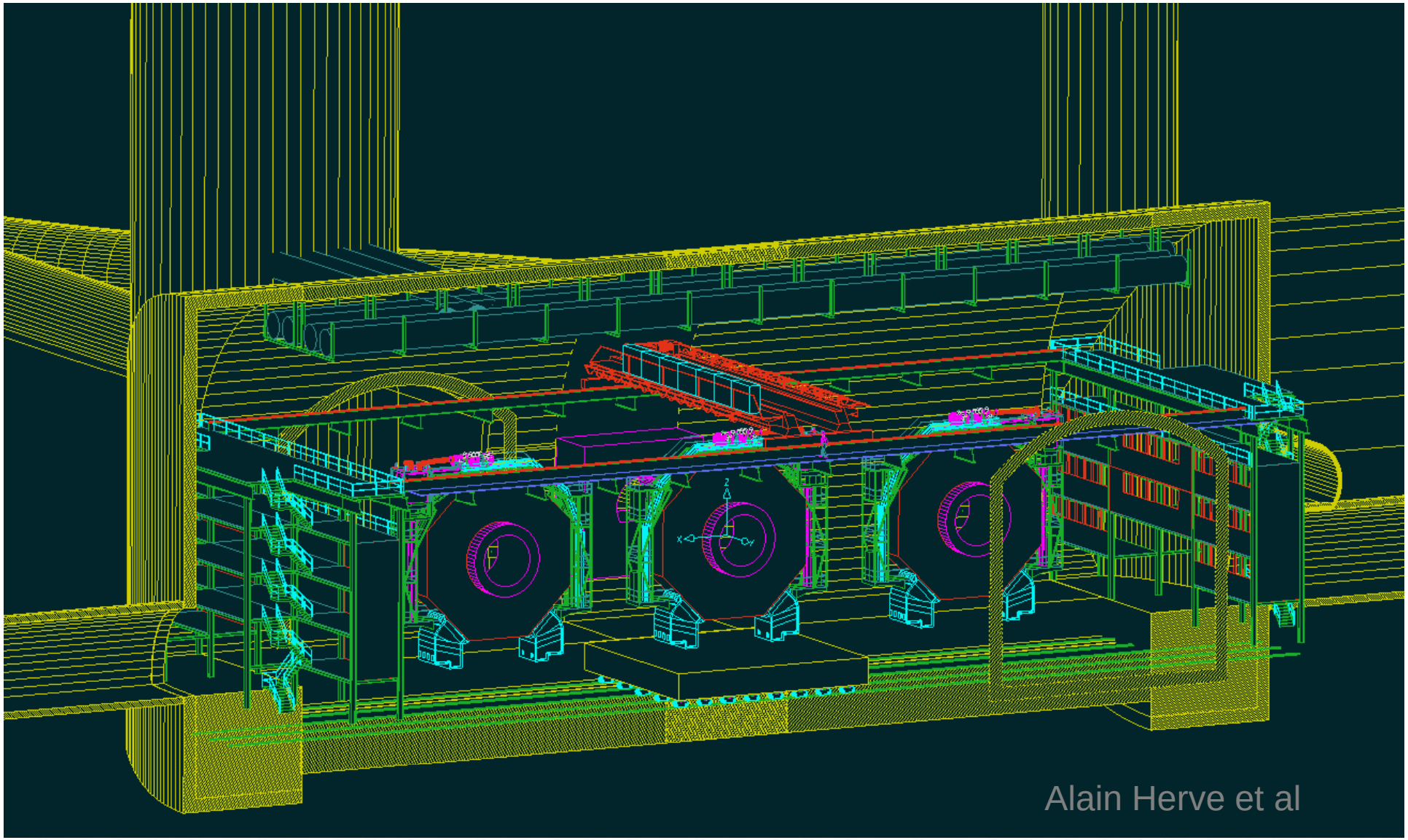




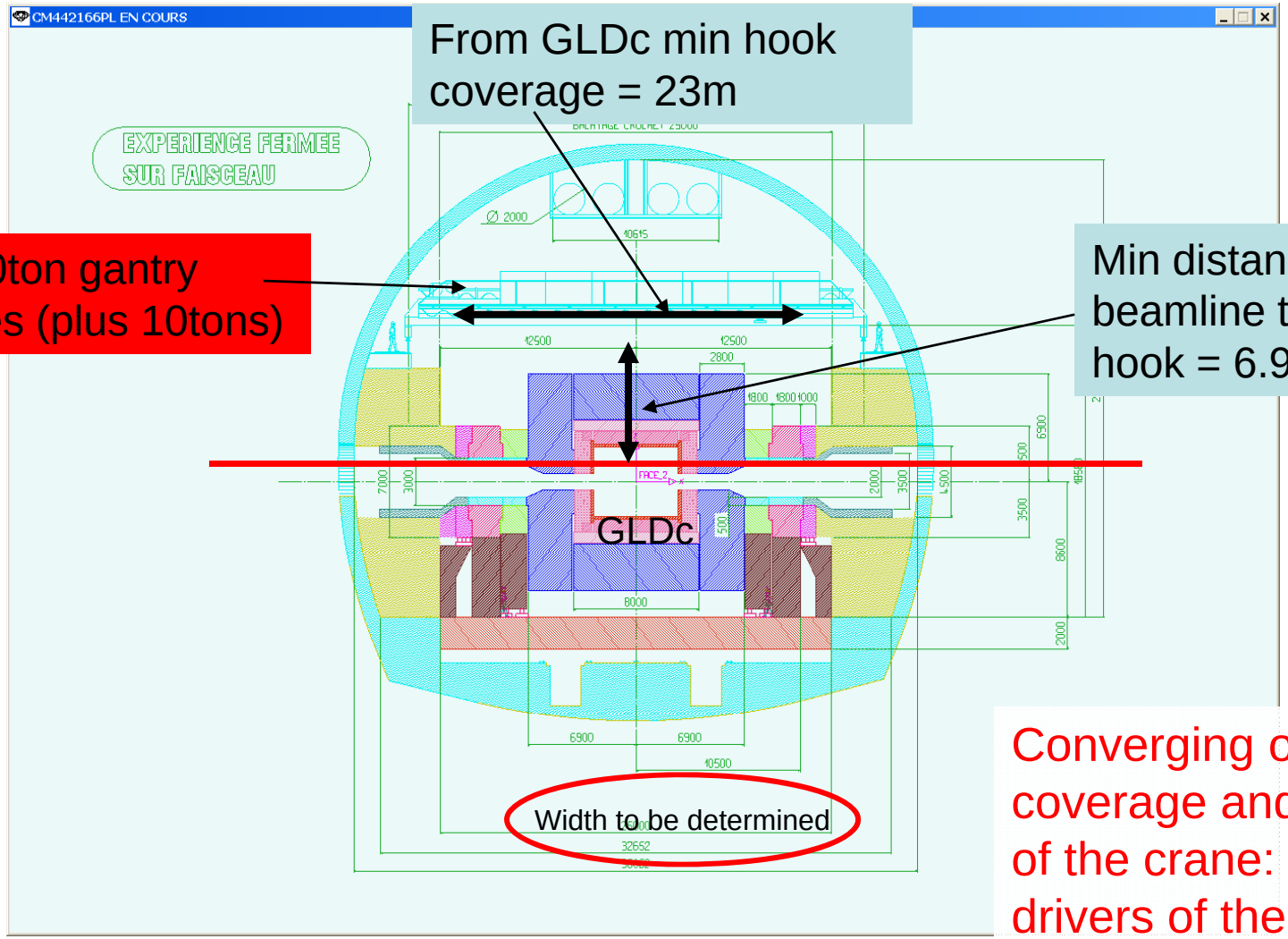


J.Amann

Details of the Push-Pull configuration and of the platform

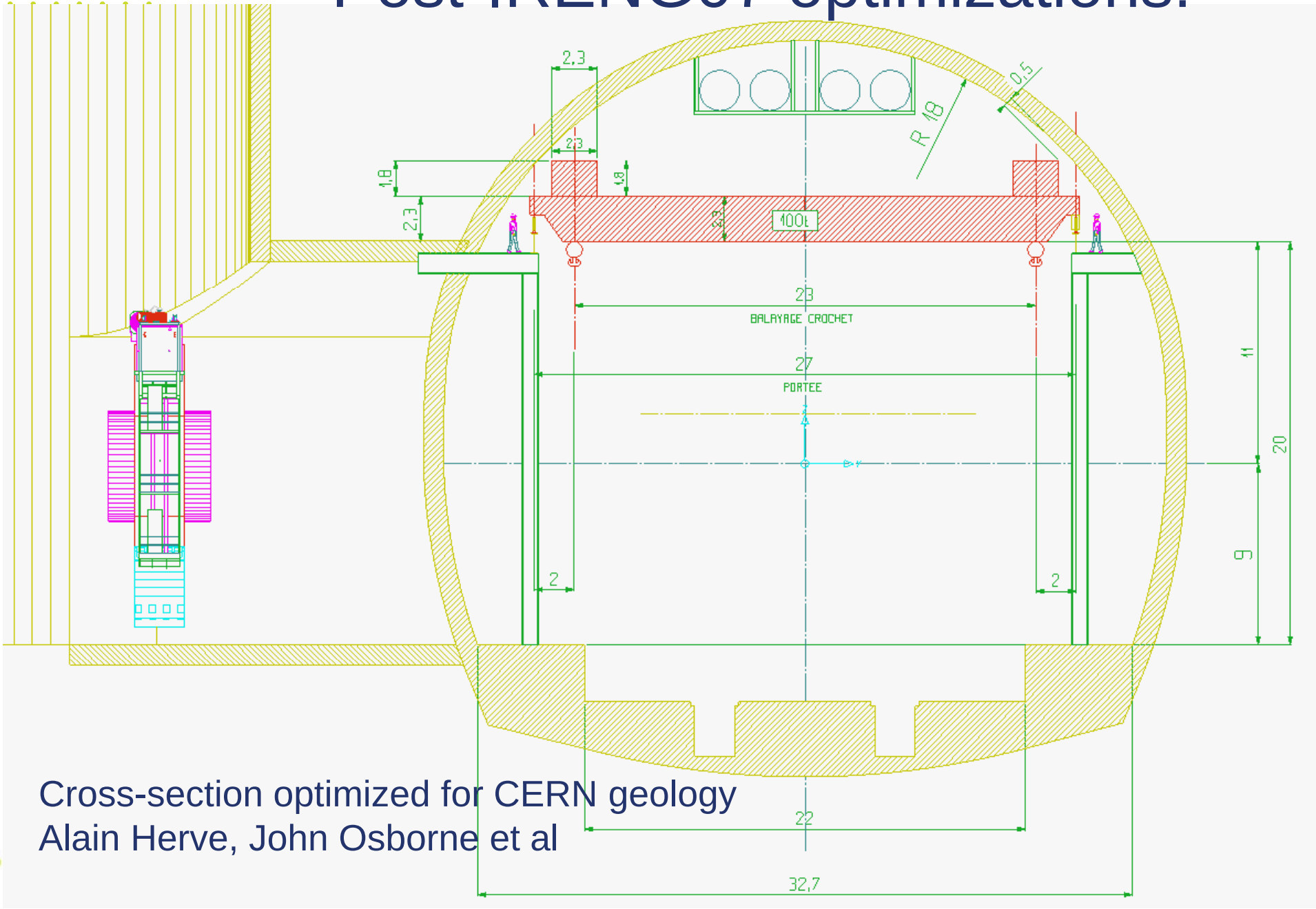


IREN07 : Experimental Cavern Criteria



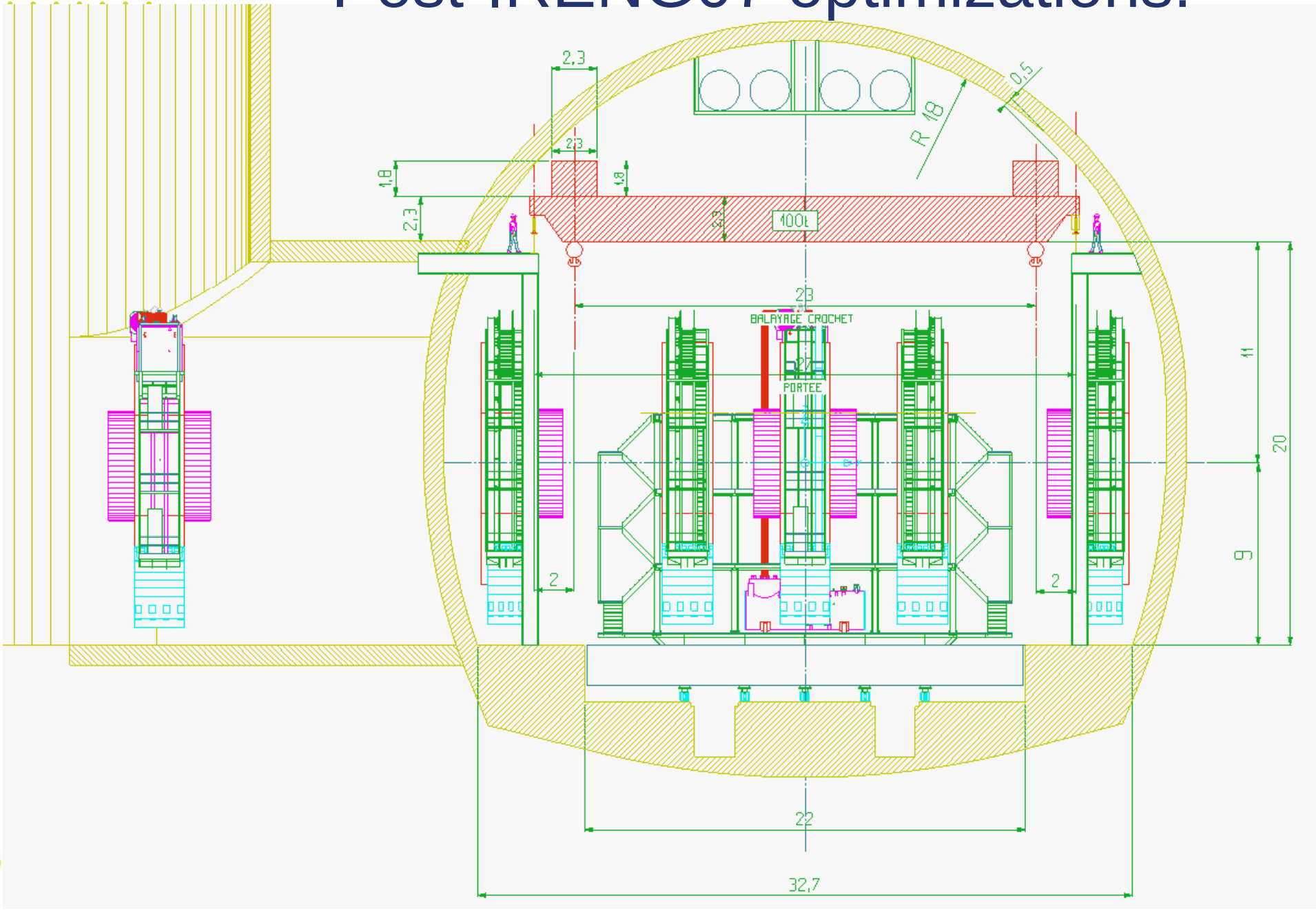
Converging on required coverage and capacity of the crane: one of the drivers of the hall size

Post-IRENG07 optimizations:



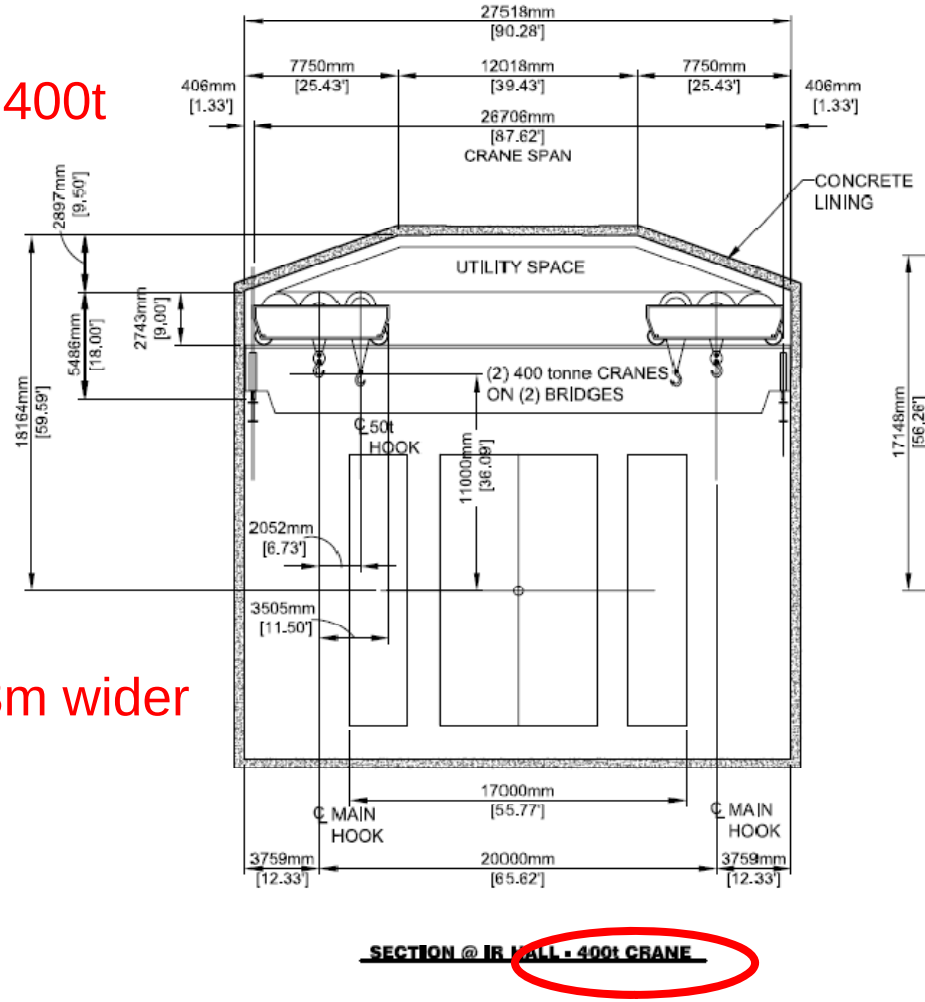
Cross-section optimized for CERN geology
Alain Herve, John Osborne et al

Post-IRENG07 optimizations:



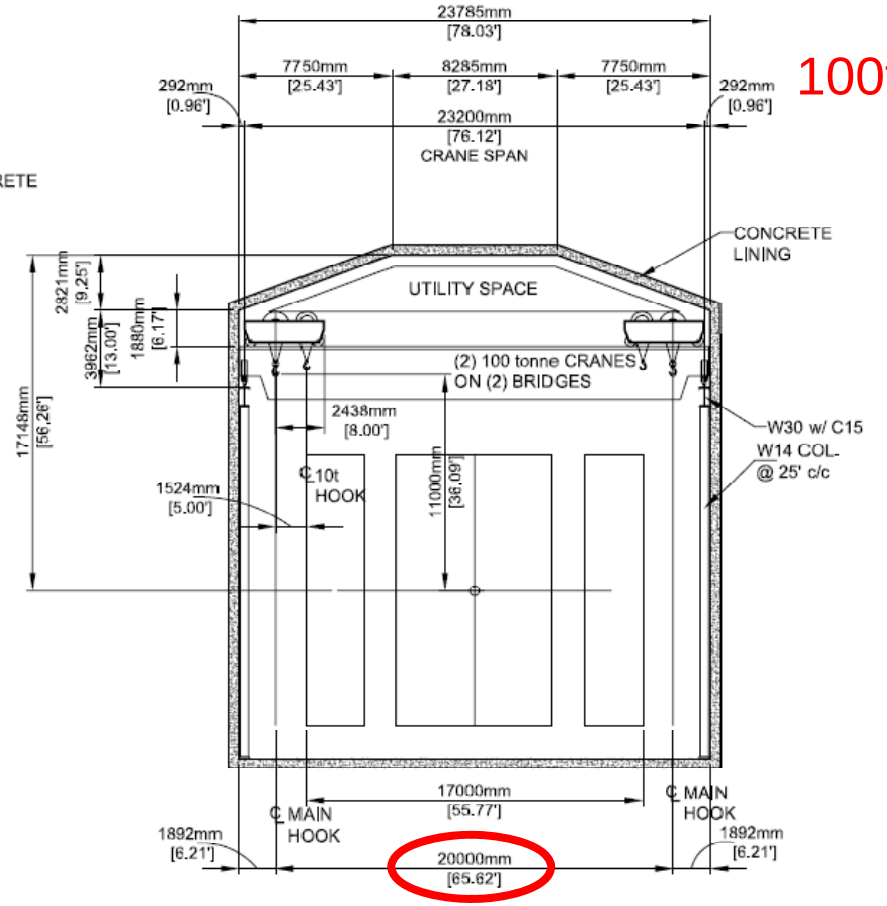
Post-IRENG07 optimizations:

400t



SECTION @ IR HALL - 400t CRANE

100t



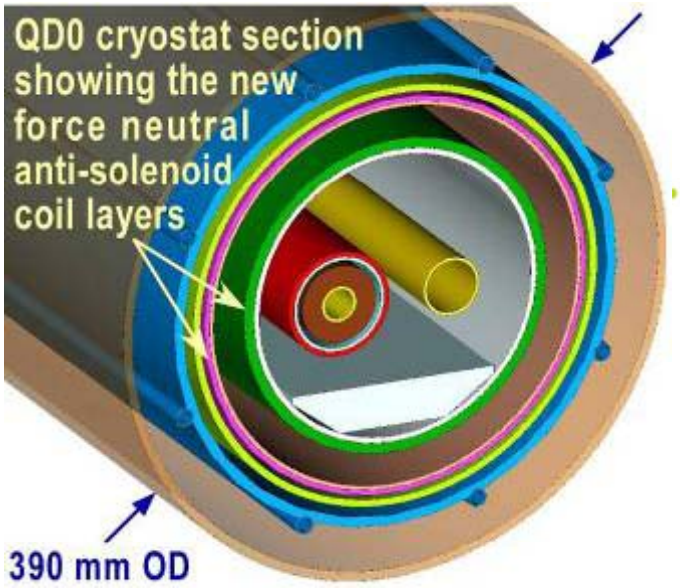
SECTION @ IR HALL - 100t CRANE

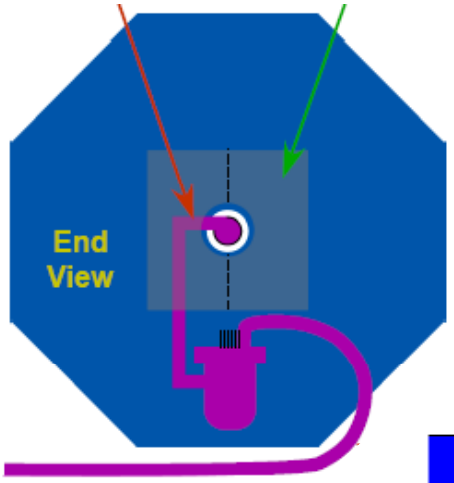
3m wider

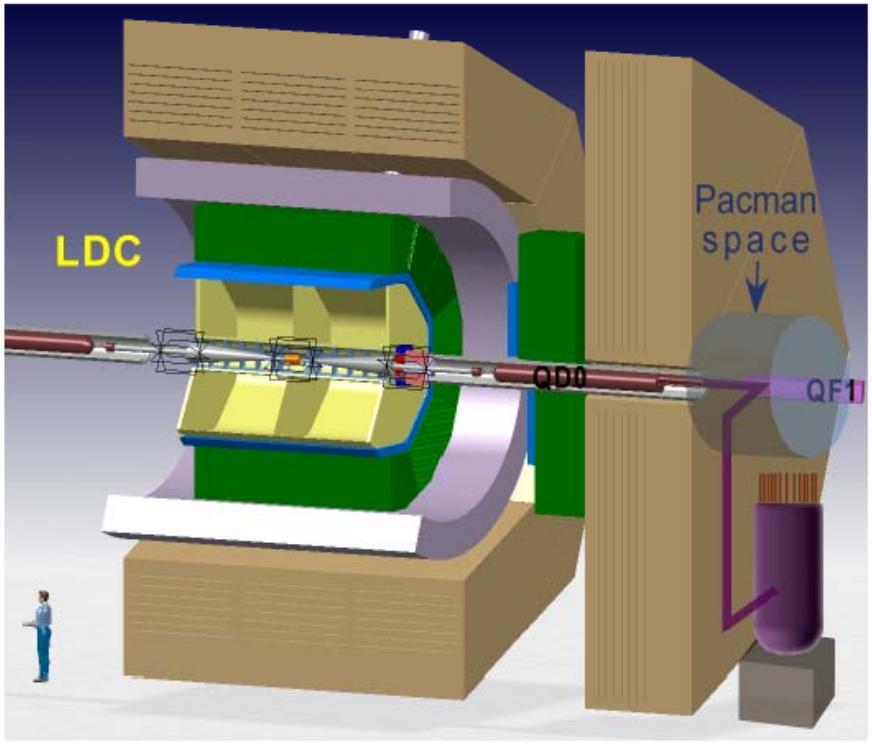
Cross-section optimized for FNAL geology, Tom Lackowskiet al

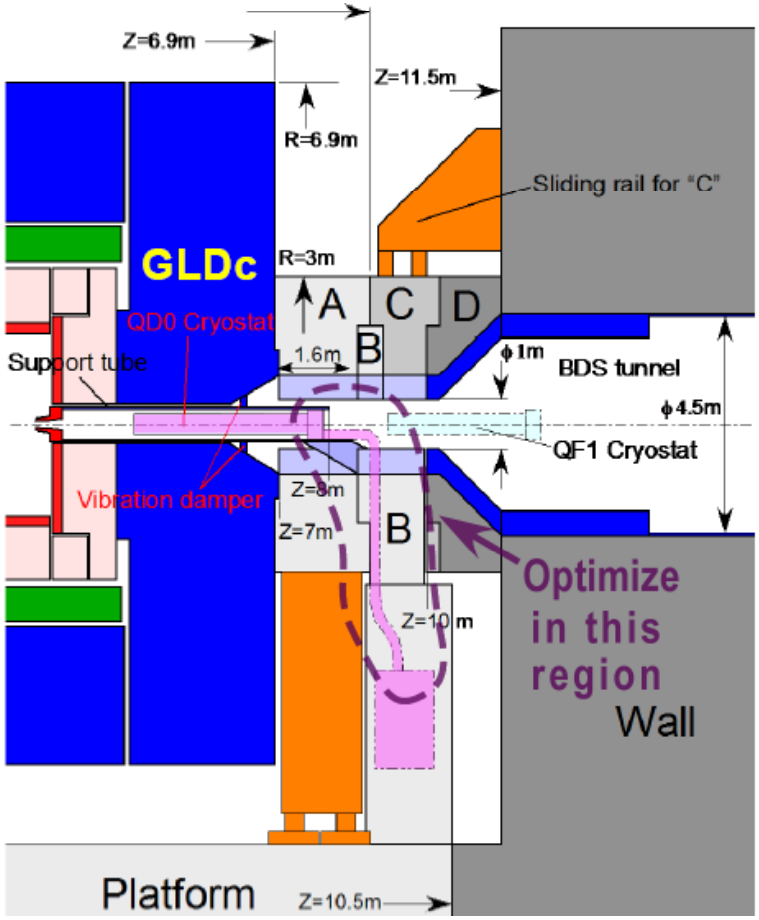
The RDR 400t crane configuration is planned to be replaced by ~100t version

Cryo, shielding & QD0 design



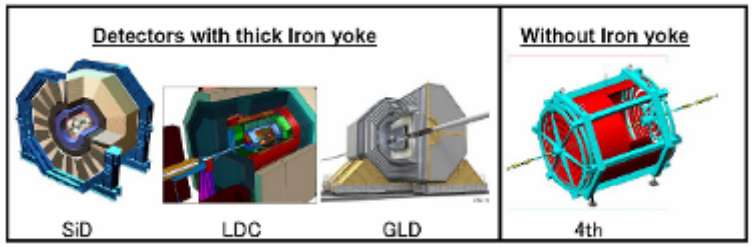




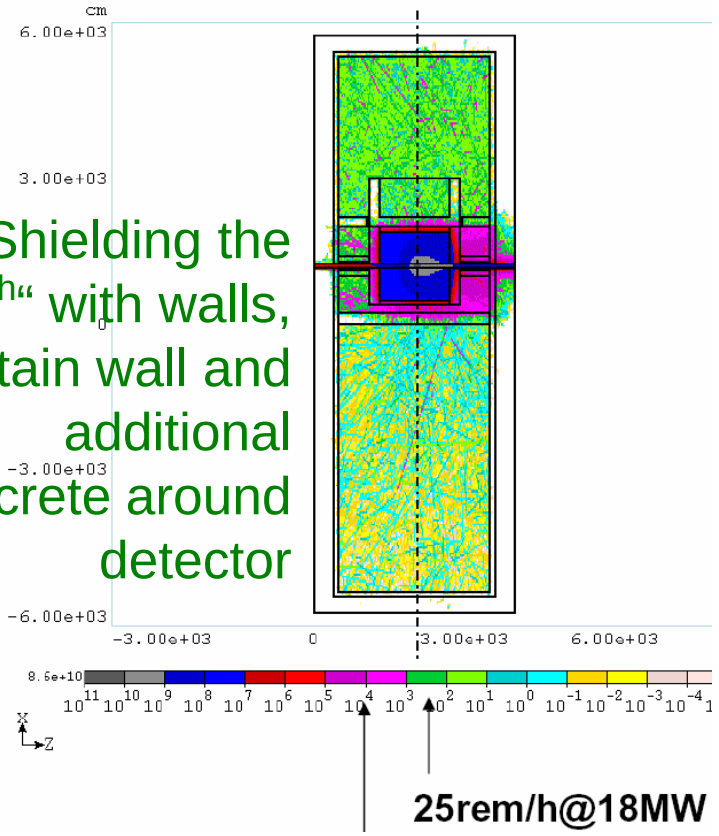


→ practical design of integr. cryo system is needed

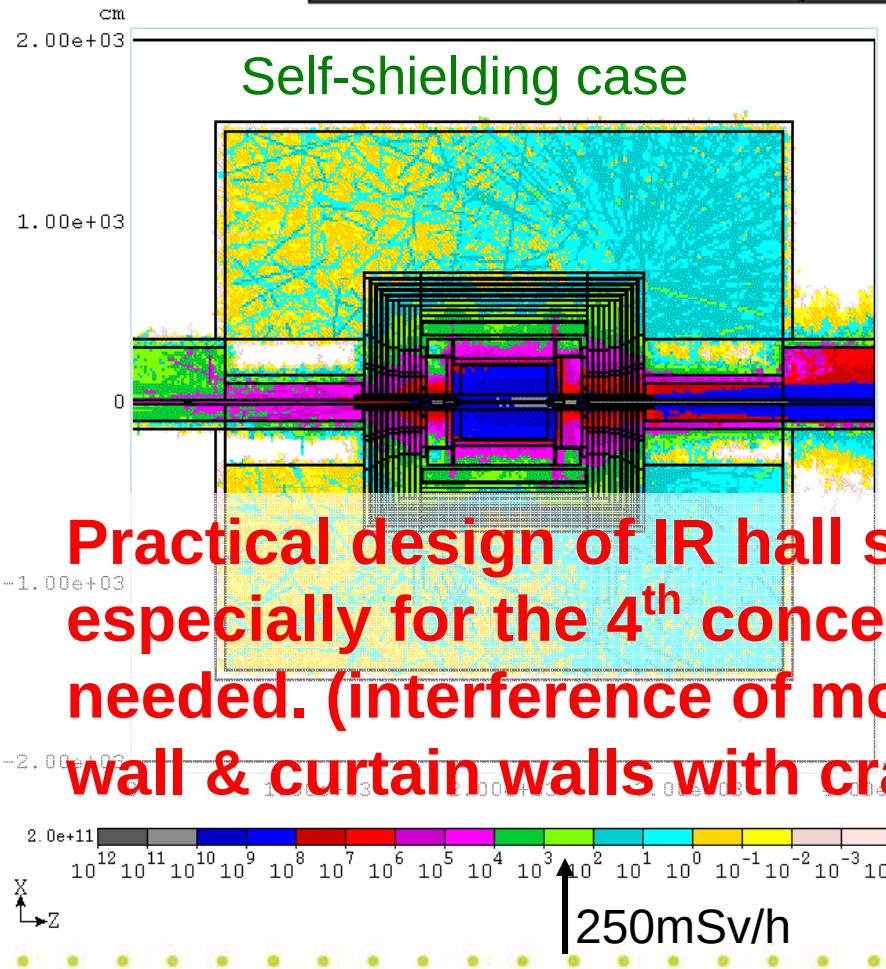
Shielding the IR hall



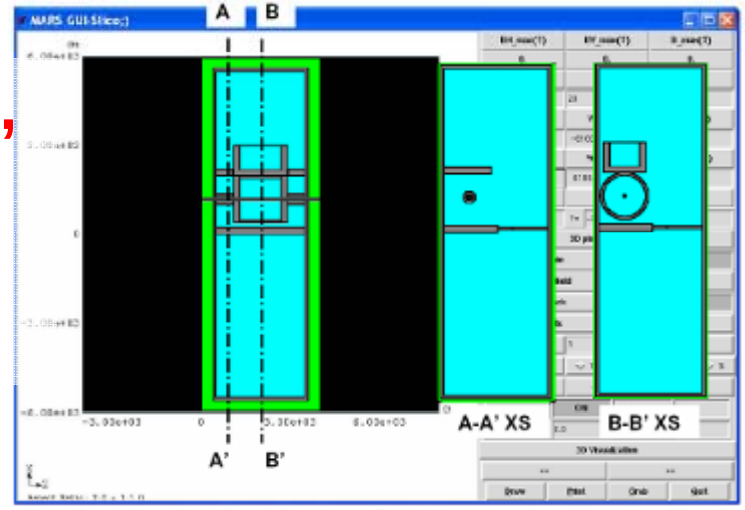
Shielding the "4th" with walls, curtain wall and additional concrete around detector



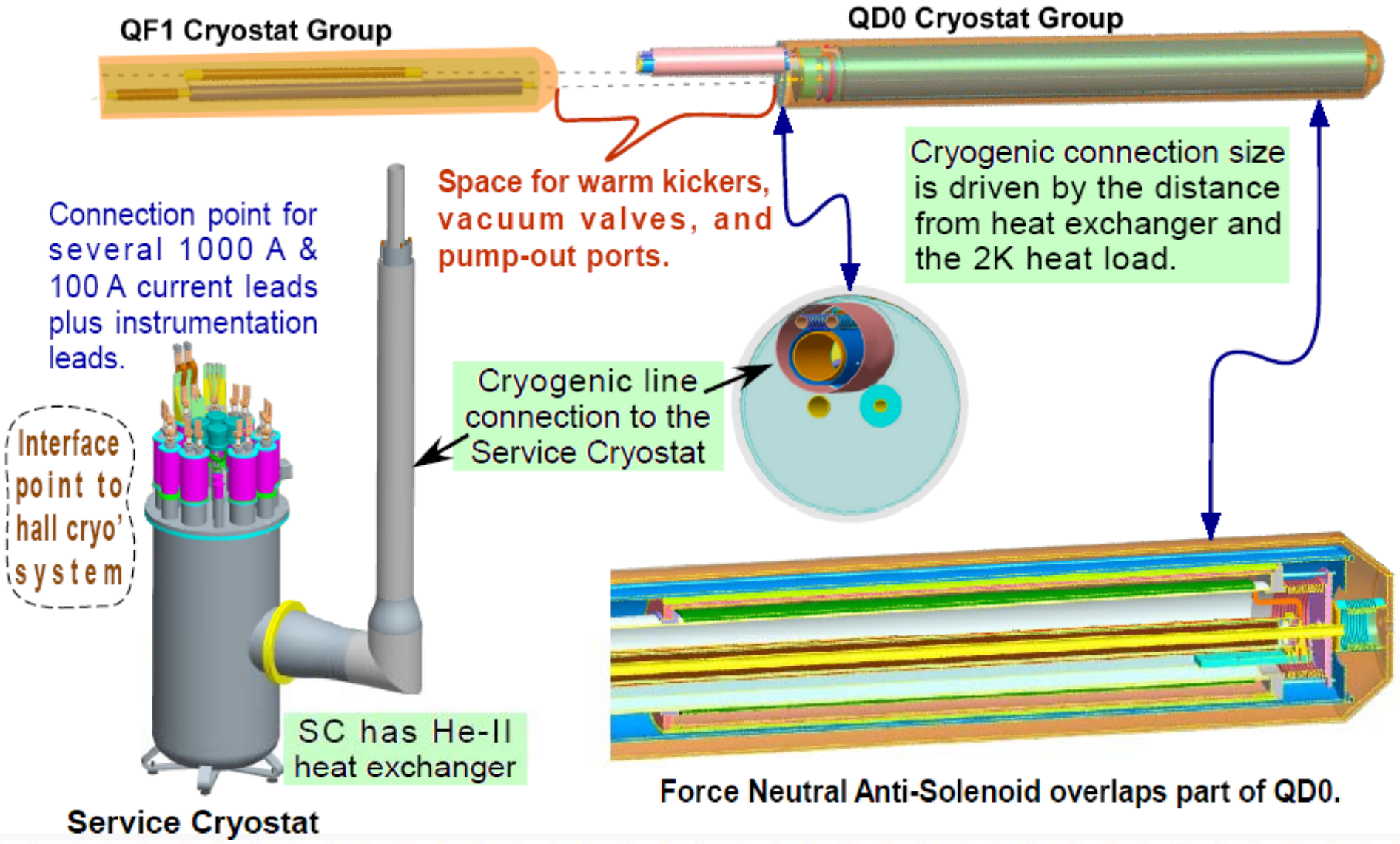
Self-shielding case



Practical design of IR hall shielding, especially for the 4th concept is needed. (interference of movable wall & curtain walls with cranes)



IR magnets and cryo connections

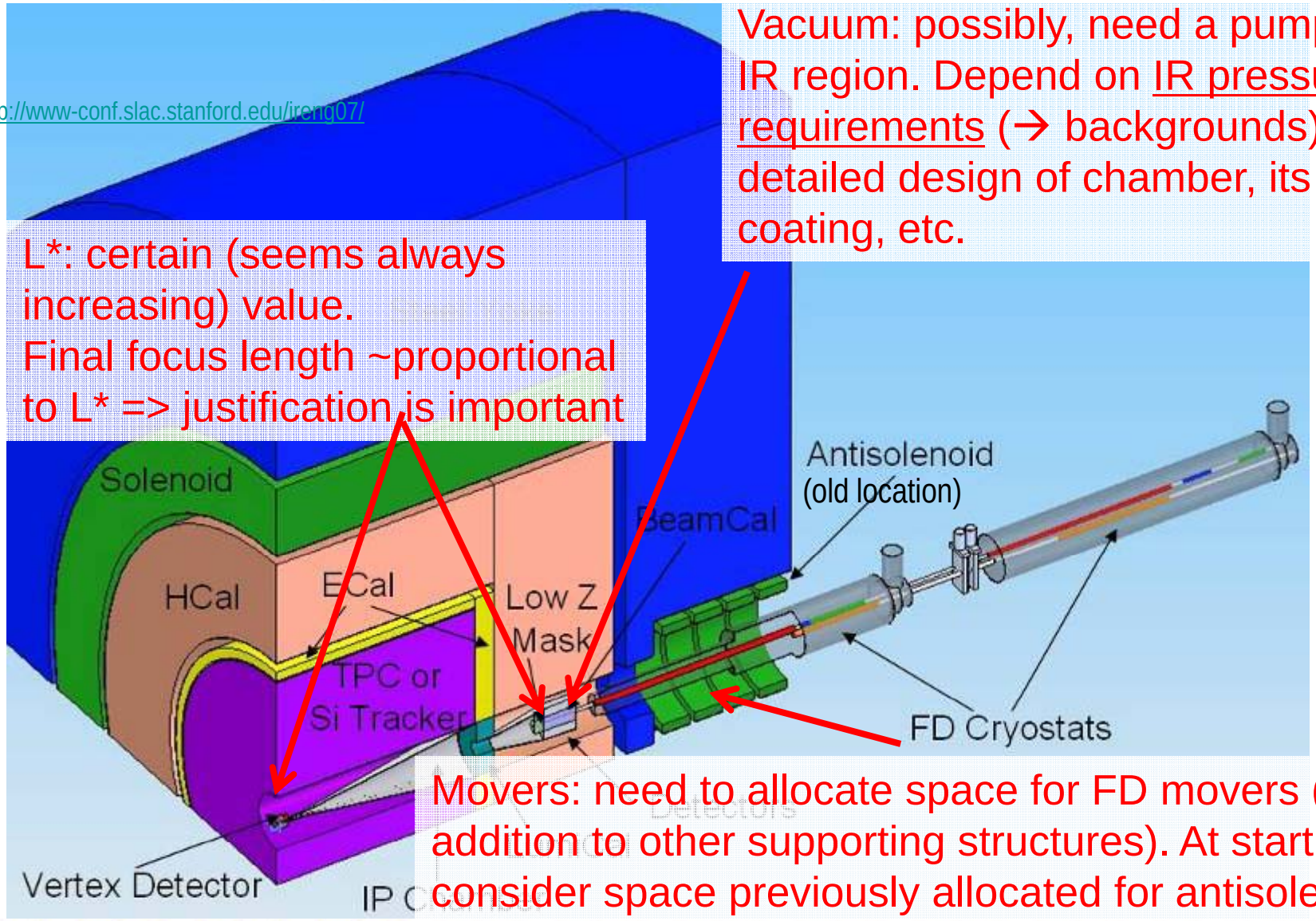


Vacuum, FD movers, L*...

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

Vacuum: possibly, need a pump in IR region. Depend on IR pressure requirements (→ backgrounds) and detailed design of chamber, its coating, etc.

L*: certain (seems always increasing) value.
Final focus length ~proportional to L* => justification is important



Movers: need to allocate space for FD movers (in addition to other supporting structures). At start, could consider space previously allocated for antisolenoid

ALCPG07 and after

- At ALCPG: put together 10 GWP, with FTE, etc and submitted to PM
- Submitted to PM an interim technical leadership structure for BDS area
- PMs approved this interim structure on Nov 3
- GWP leaders and deputies will start the work
  - **… to optimize the EDR deliverables and schedule for each package; to organize the groups work and the reporting structure and to launch their activities to fulfill the EDR goals…**