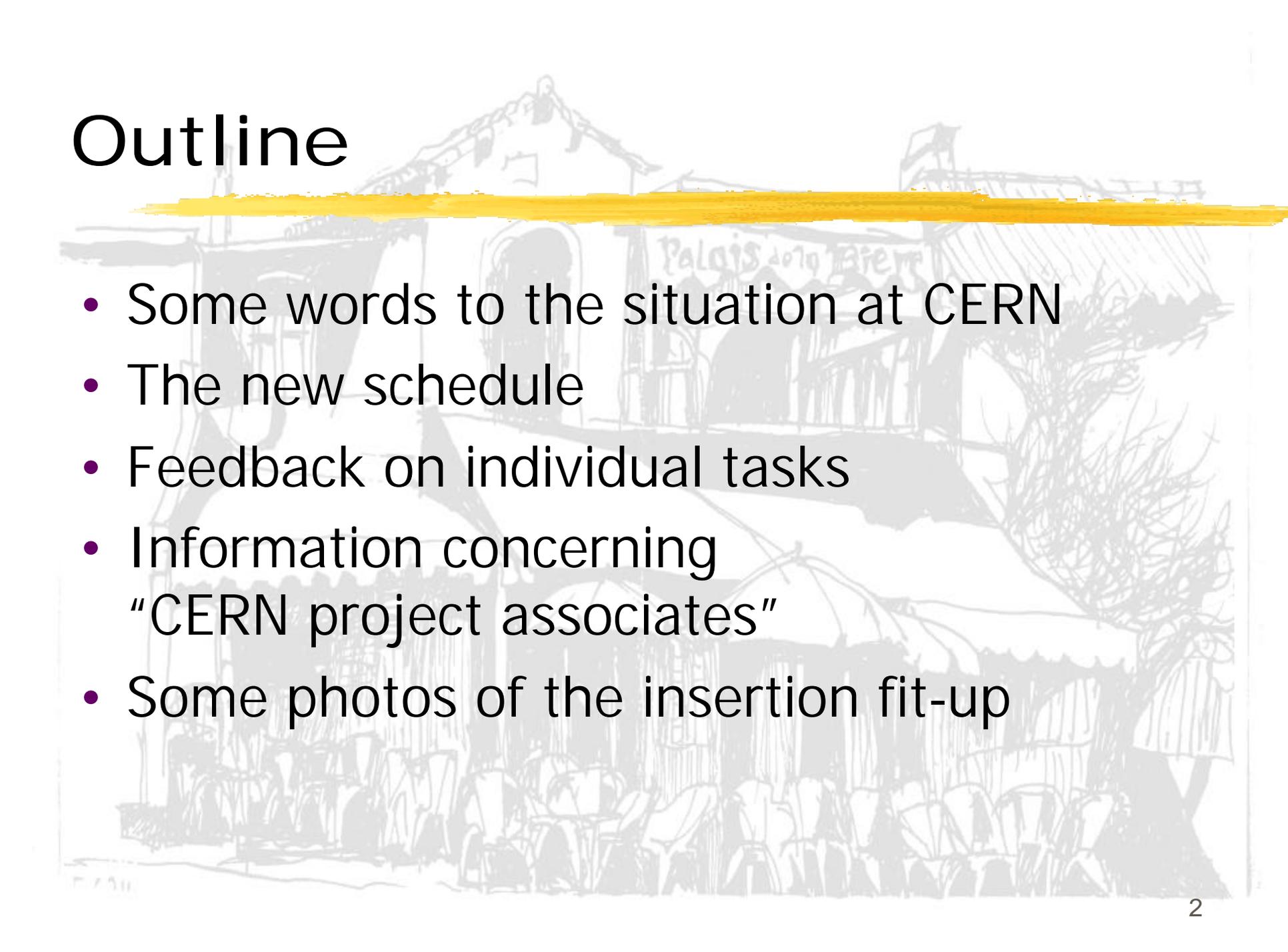


CERN perspective 4th US-LARP collaboration Meeting



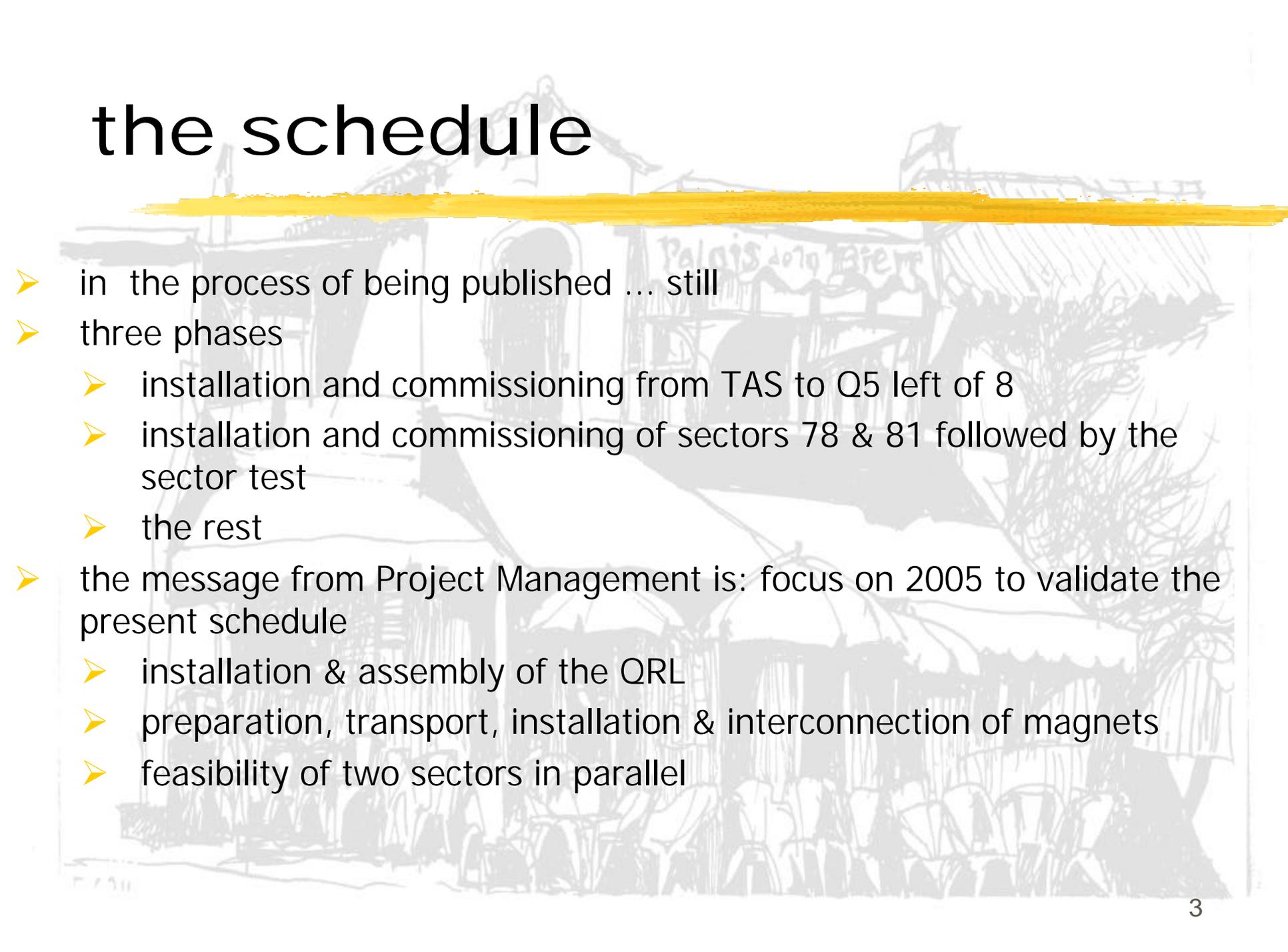
H.Schmickler, 6.4.2005
Port Jefferson, April 2005

Outline



- Some words to the situation at CERN
- The new schedule
- Feedback on individual tasks
- Information concerning
“CERN project associates”
- Some photos of the insertion fit-up

the schedule



- in the process of being published ... still
- three phases
 - installation and commissioning from TAS to Q5 left of 8
 - installation and commissioning of sectors 78 & 81 followed by the sector test
 - the rest
- the message from Project Management is: focus on 2005 to validate the present schedule
 - installation & assembly of the QRL
 - preparation, transport, installation & interconnection of magnets
 - feasibility of two sectors in parallel

The Short Term:

installation and commissioning of sectors 78 & 81 followed by the sector test

The Target:

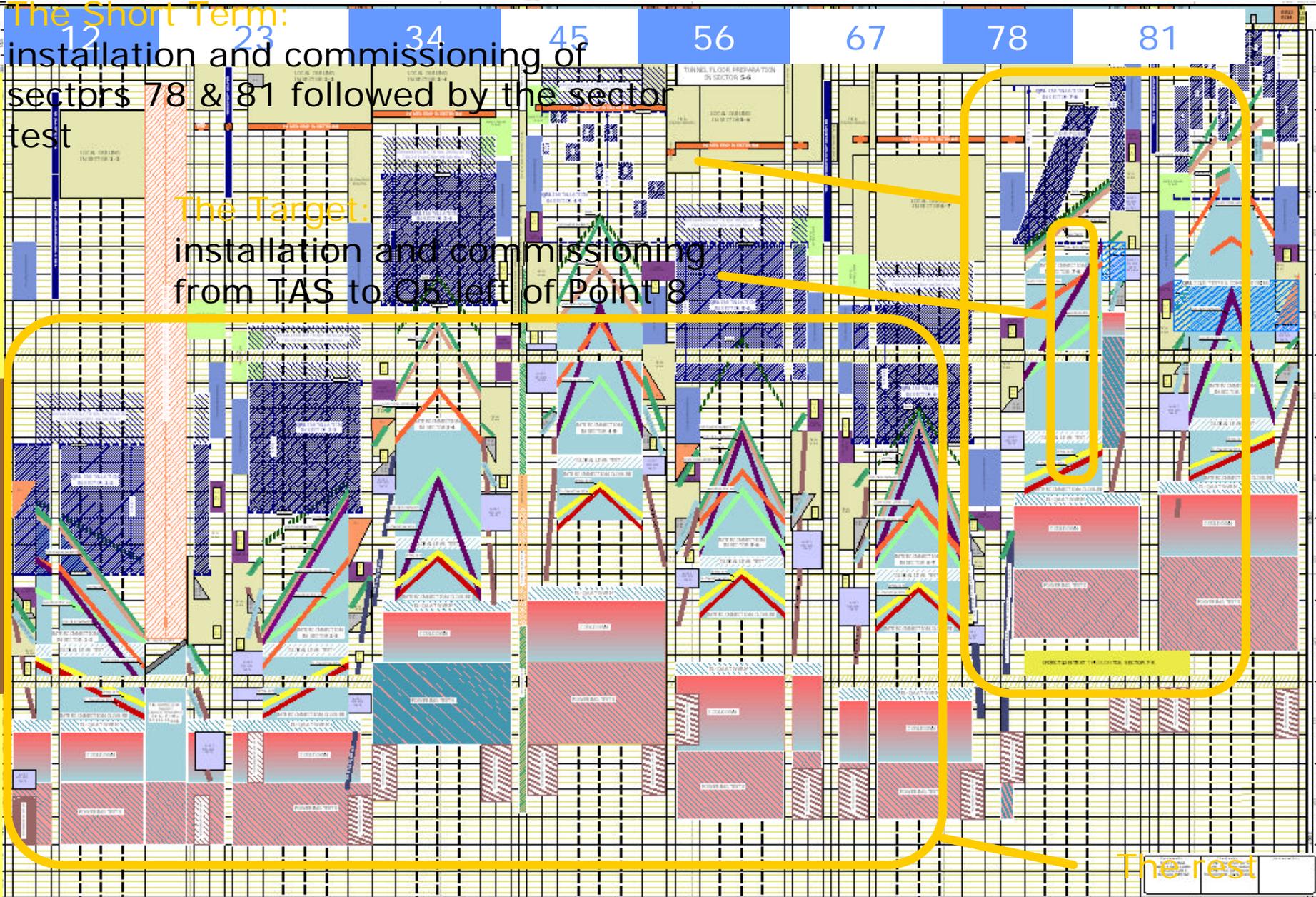
installation and commissioning from TAS to Q5 left of Point 8

The rest

2005

2006

2007



Feedback on Individual Tasks:

1. Accelerator physics (1/2)

- **Beam Beam Simulations**

US-LARP contribution to beam-beam studies using parallel 3D **beam beam code** (Ji Qiang).

CERN linkman: W.Herr.

Ongoing studies:

- halo formation (links to LHC collimation)
- emittance growth
- long range BB compensation

CERN strongly supports the required modifications to the 3D code accompanied by regular contacts/visits.

Feedback on Individual Tasks:

1. Accelerator physics (2/2)

- Electron cloud simulations
(M.Furmann (US-LARP) + F.Zimmermann (CERN))
- Present work (still to be completed):
 - benchmarking of the e- spectrum for the SPS scrubbing run
 - updated heat load predictions for the LHC
 - application to the LHC of the "Iriso-Peggs" maps approach (availability of Ubaldo Iriso?)
- CERN supports and gives priority for future work:
 - study of LHC conditioning scenarios including different filling patterns
 - RHIC simulations to analyze new measurements
 - 3D self consistent simulations including realistic longitudinal effects (using the WARP parallel code developed by L.Vay at LBNL for the heavy ion test facility HCX)

Feedback on Individual Tasks:

2. Beam Instrumentation (1/2)

- Q, Q', C- control
P.Cameron (BNL), C.Y.Tan (FNAL), R.Jones+M.Gasior (CERN)
 - well working collaboration with test installation at RHIC
 - test installation proved to be useful for RHIC
 - good theoretical understanding of observed data
 - just finished a 2 days positive review (4th + 5th April 2005):
 - i) need definition of US-LARP contribution to LHC system
 - ii) need commitments of further availability of RHIC
- Schottky System (R.Pasquinelli+A.Jansson (FNAL), F.Caspers et al. (CERN))
 - clear proposal for collaboration ready for discussion
 - still different point of view on some functional specifications (like motorization for suppression of revolution signals)
 - commitment to instrument commissioning not clear

Feedback on Individual Tasks:

2. Beam Instrumentation (2/2)

- Luminosity Monitoring
J.Byrd et al. LBL, E.Bravin (CERN)
 - Complete technical review next week at LBL
 - Expect go/no-go decisions on various aspects:
 - i) number of IPs to be equipped (2 high L, or 4 IPs)
 - ii) transition from detector R&D to system engineering and integration at CERN
 - iii) commitments to system commissioning
- Beam Beam compensation (not really instrumentation...)
T.Sen (FNAL) + F.Zimmermann (CERN)
Expecting formal proposal to US-LARP...
- AC-dipole
did not find any US-protagonist...wait and see

Feedback on Individual Tasks:

3. Collimation

- Good progress on formal agreements for individual tasks
- Other labs than SLAC are involved
 - FNAL (N.Mokhov et al.) simulations for tertiary Phase I collimators in the LHC
 - BNL (A.Drees) Simulation studies for Phase I collimation
- Formal recognition at CERN of the necessary efforts for the Phase II collimation system
 - significant budget increase for the collimation system
 - dedicated part of this budget for material and human resources for Phase II collimation
- ...US-LARP complements the ongoing CERN program

Feedback on Individual Tasks:

4. HW and Beam Commissioning

- Significant US contribution to the surface fit-up of the insertion magnets (see following photos by R. Ostojic)
- Organization of additional resources for hardware commissioning using US-LARP as “vehicle” is in the pipeline...
 - Detailed description of the needs and possible schedules: R.Saban in the parallel session
 - just explain in the plenary session the conditions (next slide)
- Beam Commissioning:
Good progress in the lines as explained during last collaboration meeting:
 - role of the US contribution defined
 - CERN names added to the commissioning teams
 - details: Talk of R.Bailey)

employment conditions as CERN project associate

➤ Conditions

- the Project Associate must remain a regular employee of the home institution
- the home institute must declare that it pays at least 30% of the salary
- the home institute is legally responsible for matters such as social security valid in the Geneva area, complementary health schemes are paid by the individual

➤ Salary

- CERN pays 4000 CHF to bachelors and 5000 to married Project Associates.
 - NB the spouse must accompany him/her to Geneva for at least six months and she/he must not have any income in the Geneva area

➤ Length of Stay

- Employment period of one year renewable three times

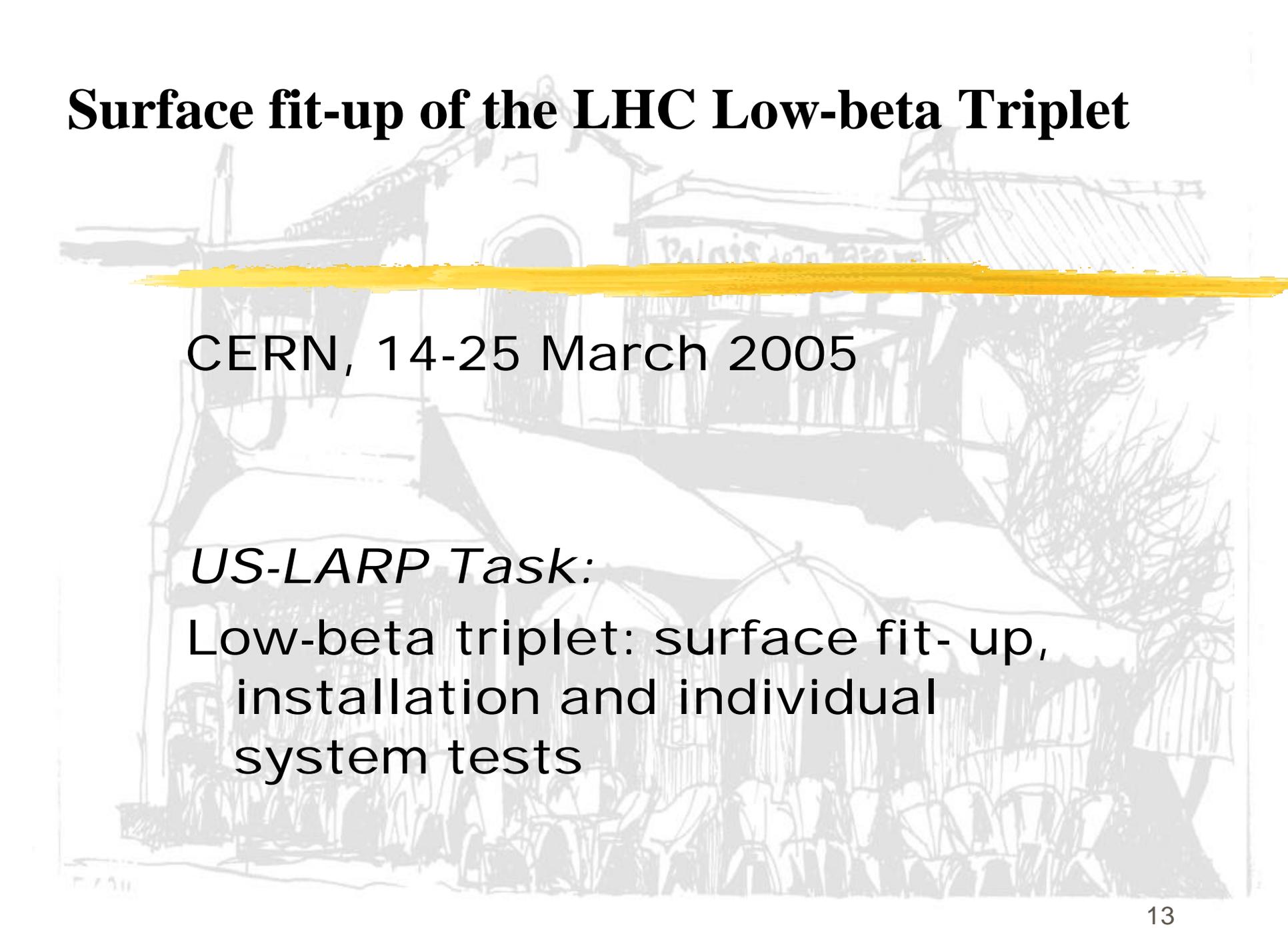
➤ Other arrangements exist, but are more difficult to obtain

Feedback on Individual Tasks:

5. Magnet Program

- Magnet Program has presently (and naturally) not a real corresponding effort at CERN
- Feedback on CERN's perspective from L.Rossi on several past meetings/occasions
- L.Rossi has documented his input in a letter to S.Peggs:
Main message: Focus the present US-LARP effort on magnets (and supporting R&D), which are of medium term perspective for an LHC Luminosity upgrade with classical but stronger focusing and bigger aperture insertions.

Surface fit-up of the LHC Low-beta Triplet



CERN, 14-25 March 2005

US-LARP Task:

Low-beta triplet: surface fit-up,
installation and individual
system tests

Low-beta triplet fit-up

- Check all interconnect elements (mechanical, electrical, instrumentation).
- Mount and check alignment equipment.
- Check string behaviour under insulation vacuum.
- Check handling equipment.



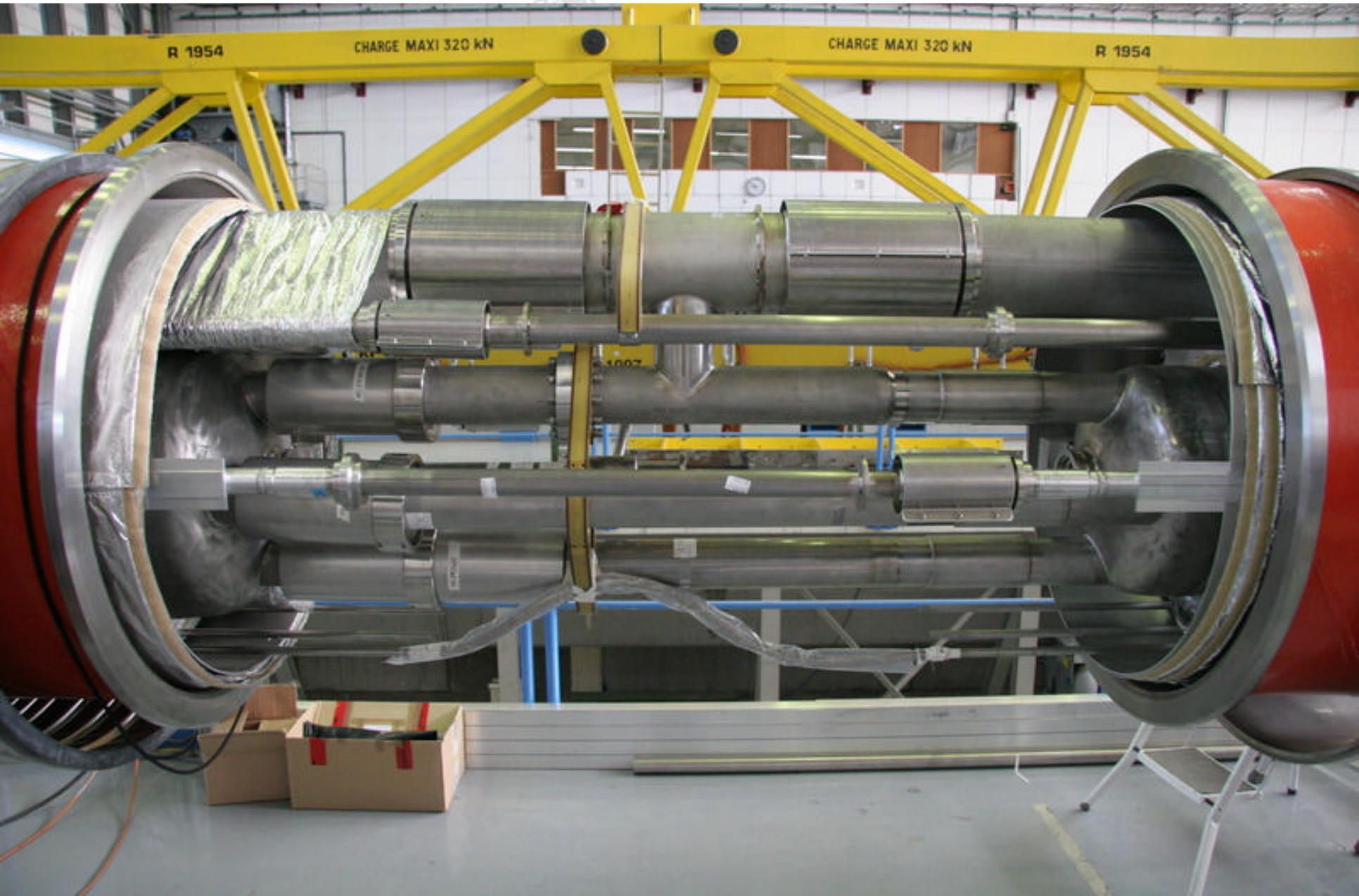
Low-beta triplet in Bld 181



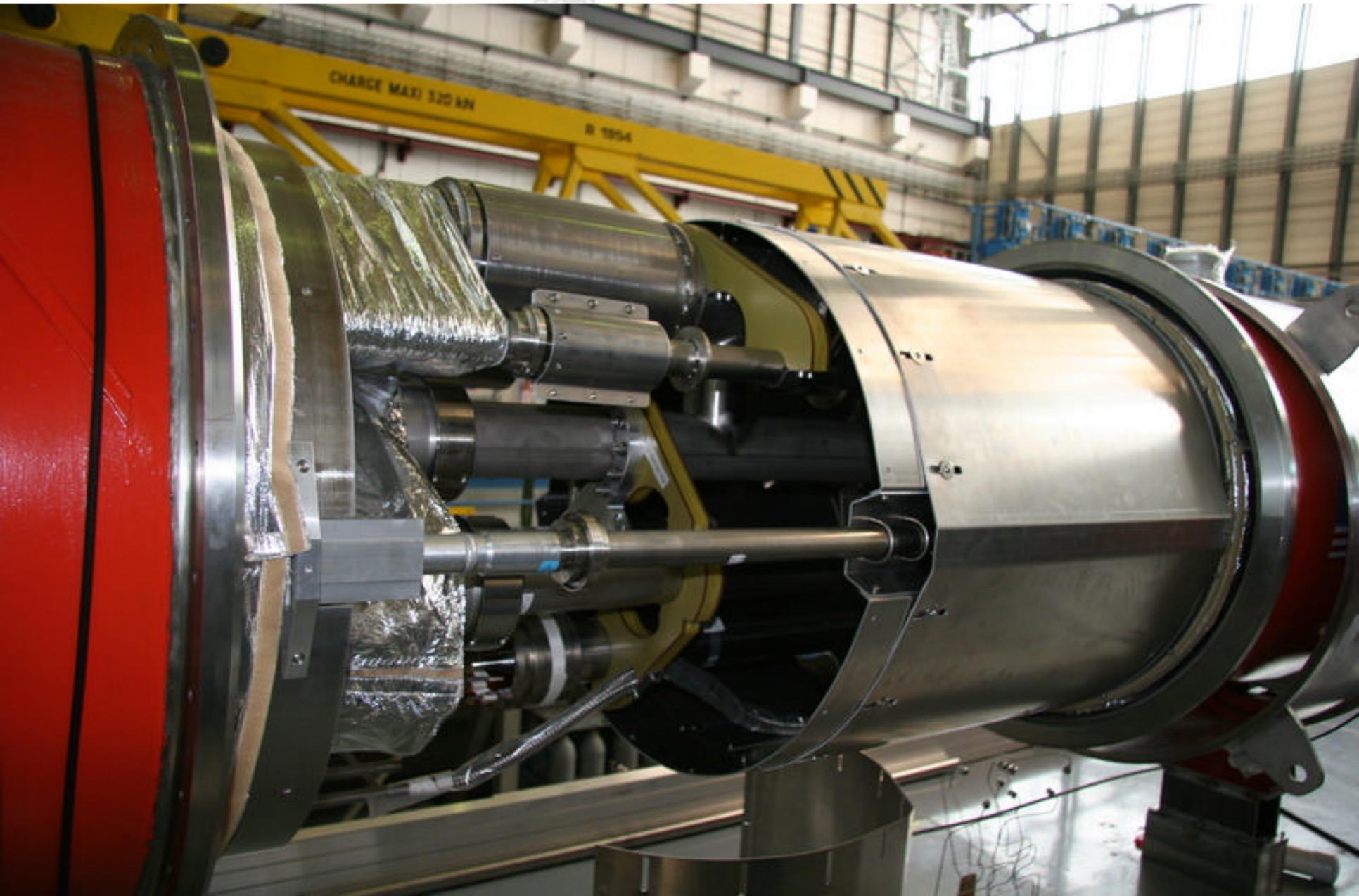
DFBX-G



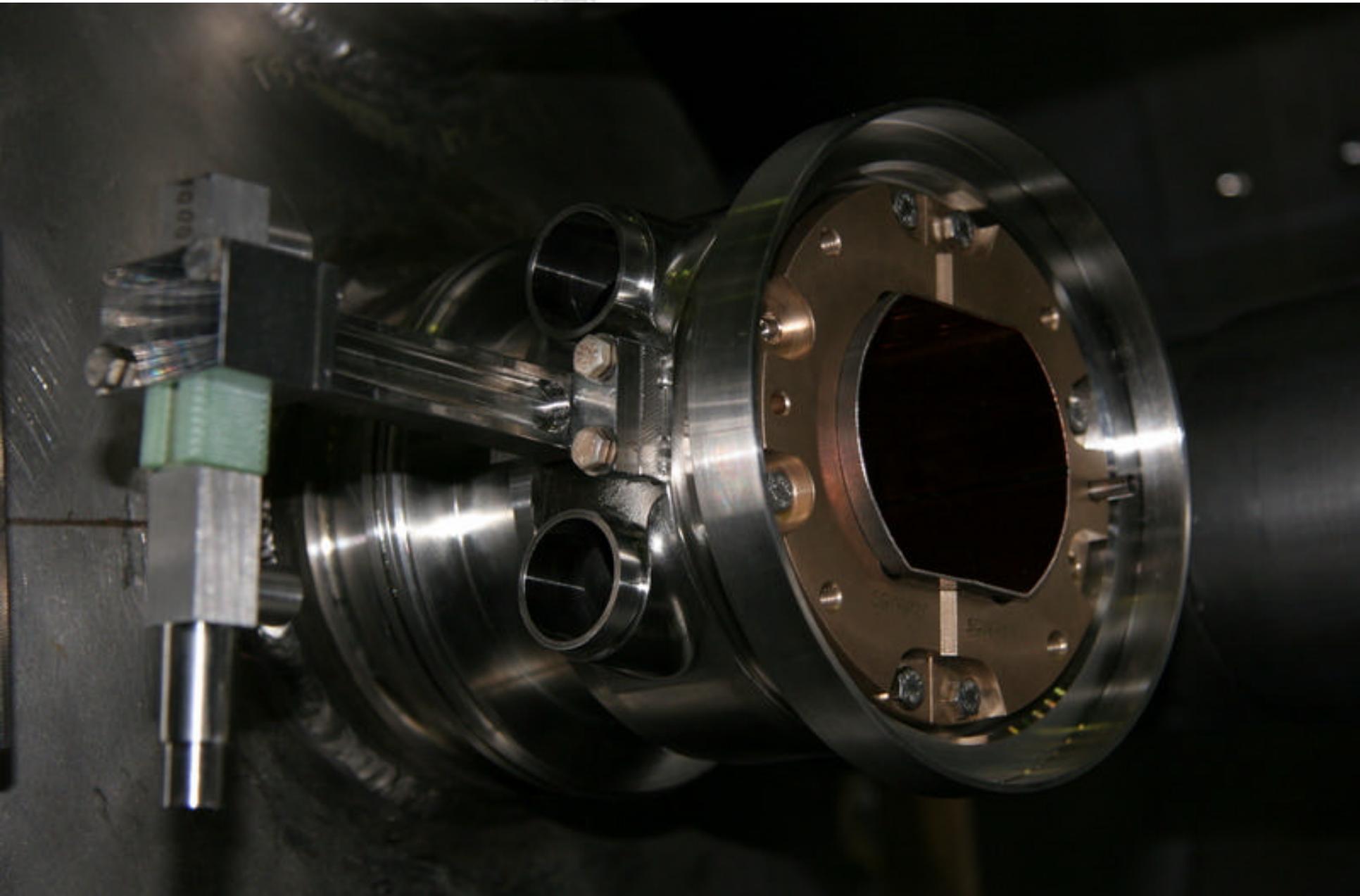
Q1 - Q3 Interconnect



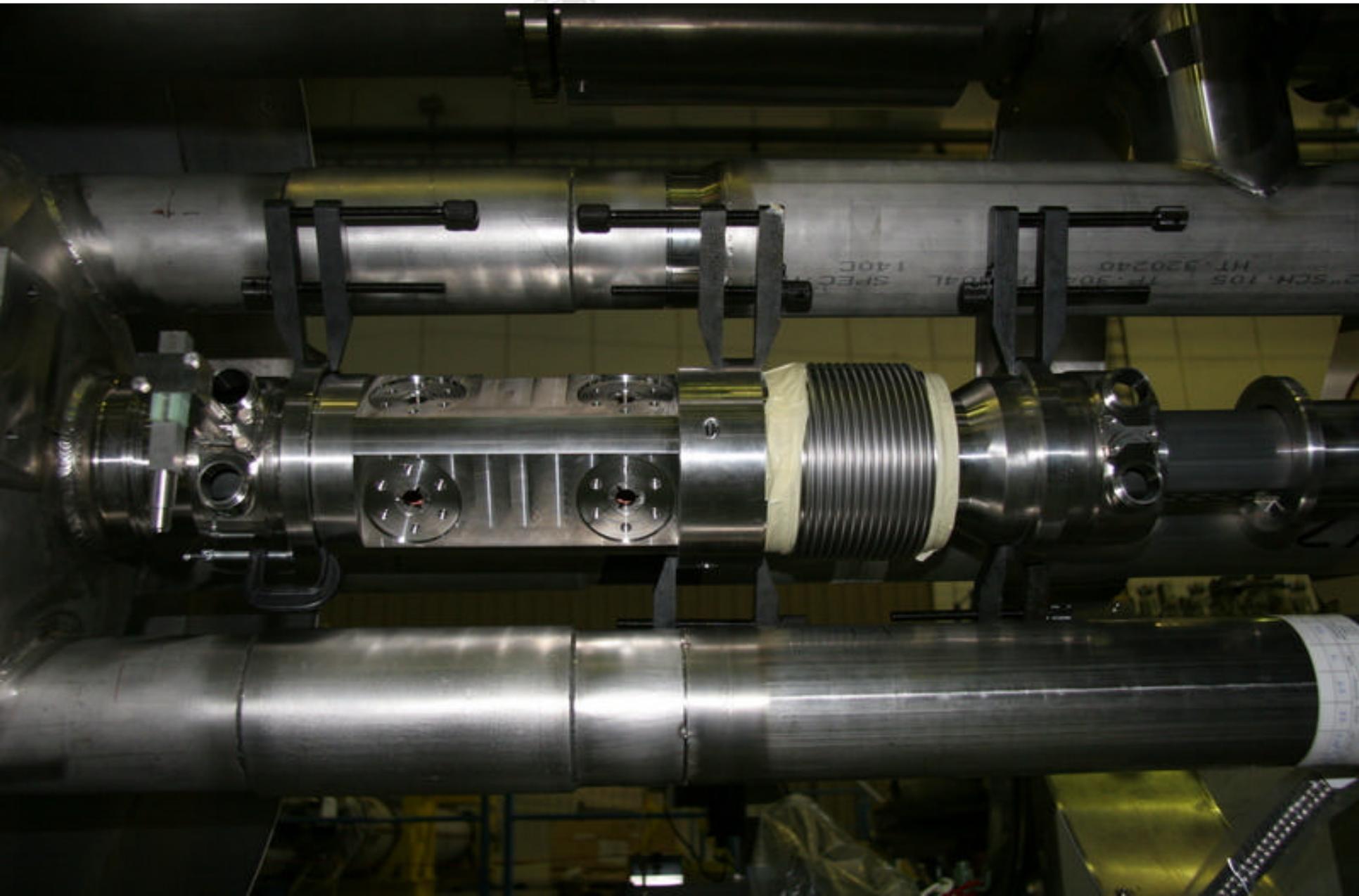
Q1 - Q2 Interconnect



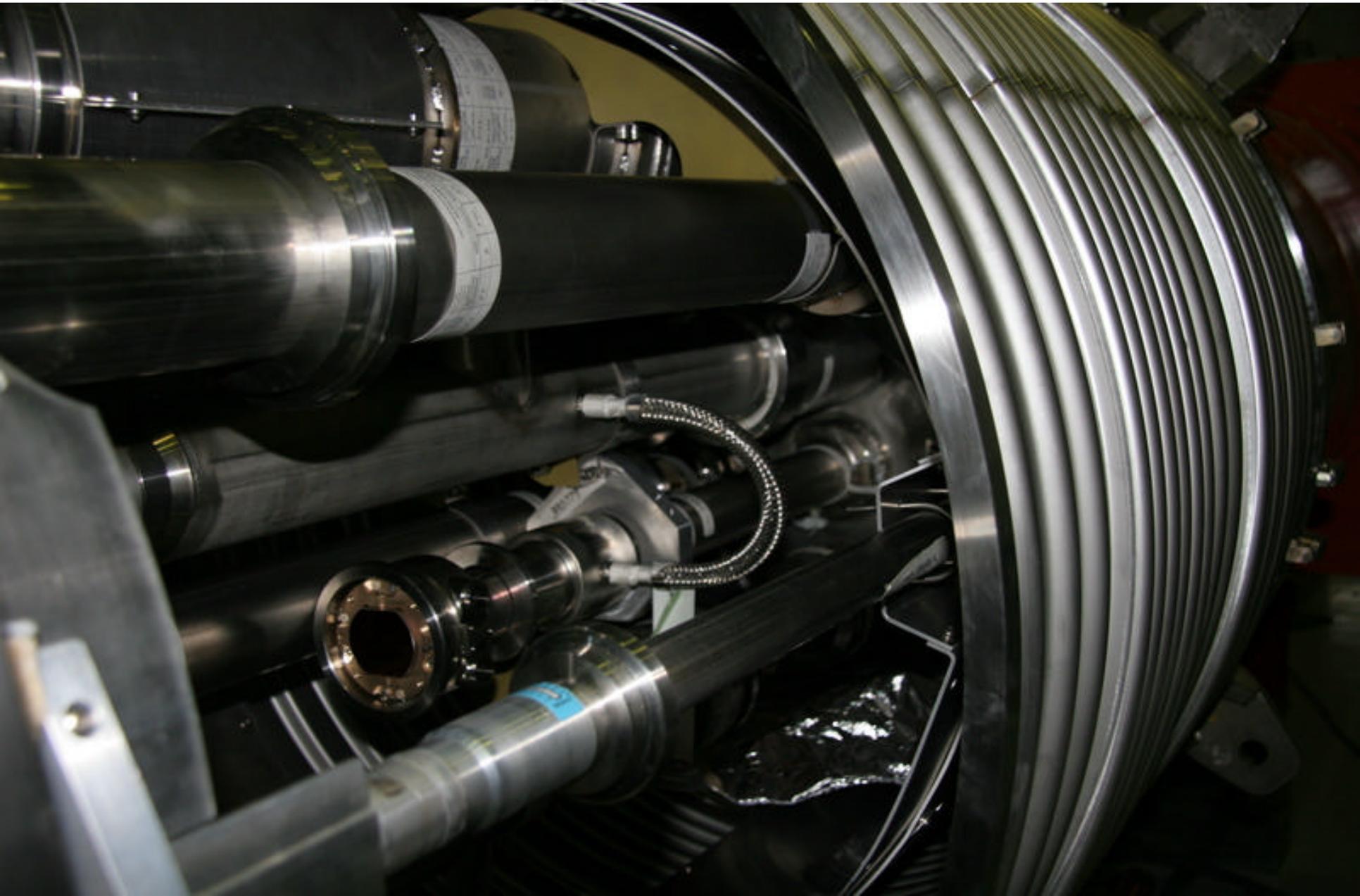
Beam screen - fixed point



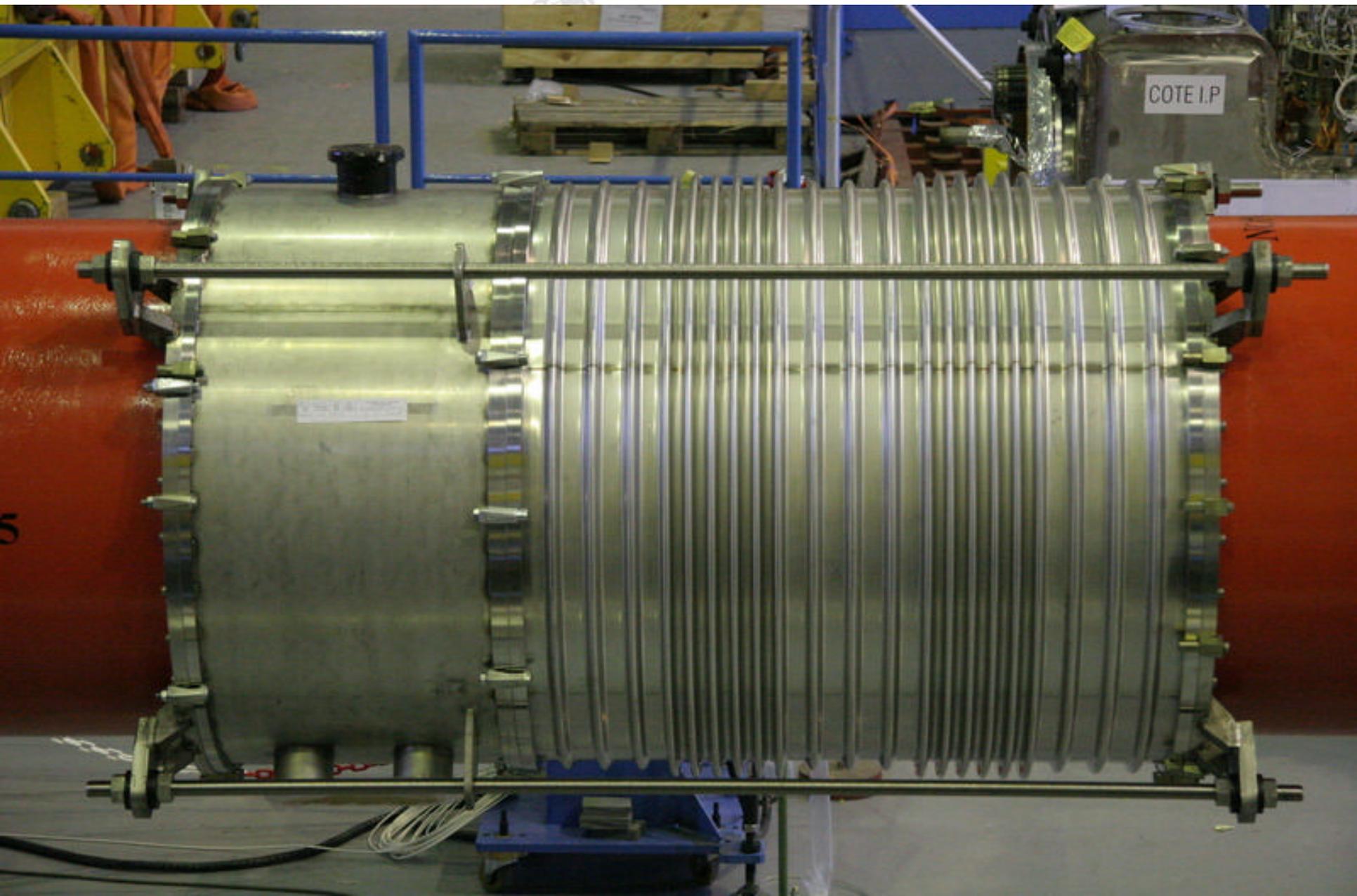
Q2 - BPMS



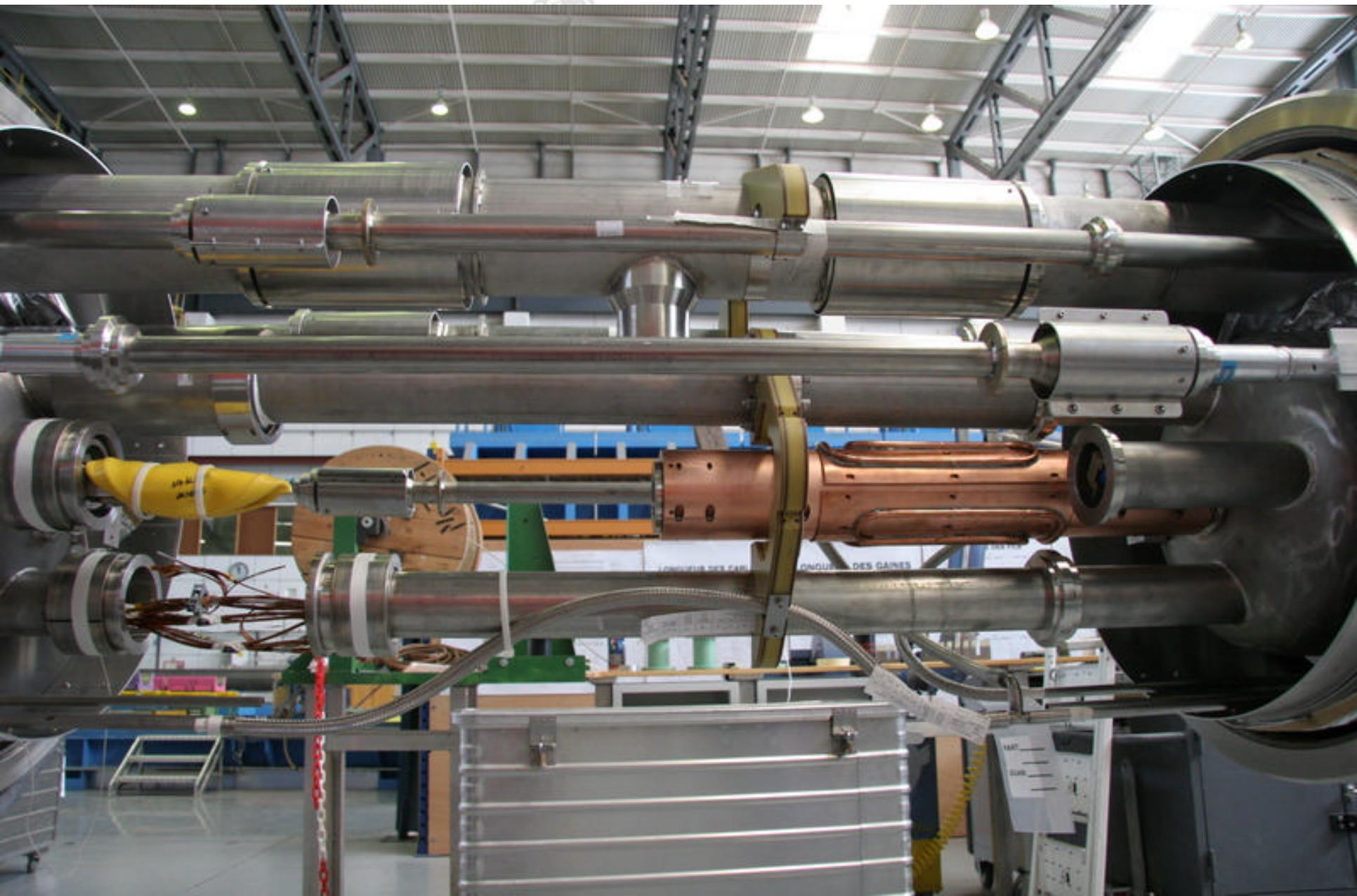
Q2 - Plug-in module



Q1 - Q2 Closure



Q2 - Q3 Interconnects - TAS B



“Watch-out, beam!”

