



# Report on the 7th Open Belle II General Meeting



- Belle II Funding and other News
- Some PXD Issues:

Patch panel location, cable lengths

New Beampipe

Backgrounds: QED analysis update

New idea for the PXD data reduction

- Schedule



7th Open Meeting of the Belle II Collaboration - Windows Internet Explorer

http://belle2.kek.jp/B2GM/7th/index.html

Favoriten Tsukuba-EXP hall Belle Indico Belle Homepage Belle II Homepage

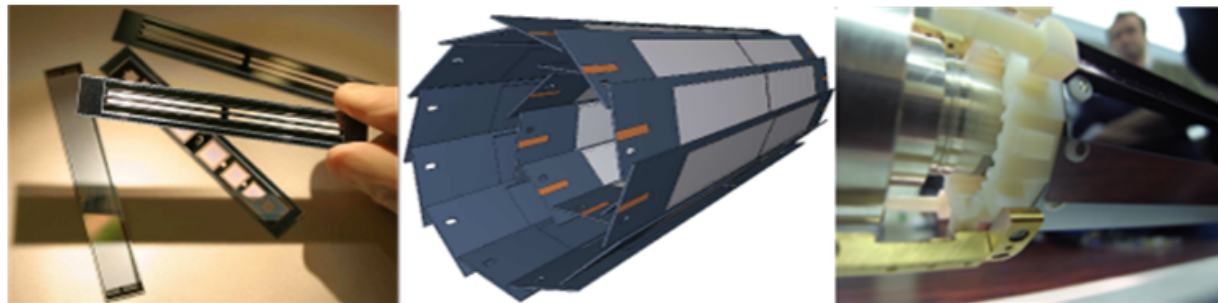
7th Open Meeting of the Belle II...

## Registration

To register, please fill [the 7th B2GM registration form](#)  
If you have trouble to access the registration page, please send your name, affiliation, country, status (staff/student), and e-mail address to the Belle secretariat (FAX number and e-mail address can be found [here](#)).

## Goals

Following the KEK roadmap, the KEKB accelerator will be upgraded in 3~4 year to reach an initial target luminosity of  $8 \times 10^{35} \text{ cm}^{-2}\text{s}^{-1}$ . This meeting is expected to be an important step towards finalizing the design of the Belle-II spectrometer.



This page is maintained by T.Hara for Belle II Collaboration  
2010-11-08 19:55

VII B2GM (17-20 November 2010) - Windows Internet Explorer

http://kds.kek.jp/conferenceOtherViews.py?view=standard&confId=5997

Favoriten | Tsukuba-EXP hall | Belle Indico | Belle Homepage | Belle II Homepage

VII B2GM (17-20 November 2010)

## Wednesday 17 November 2010

08:30	Registration (30')	
09:00	Chair: T. Iijima (Nagoya Univ.)- Opening address (10') ( Slides )	P. Krizan (Univ. of Ljubljana)
09:10	News from KEK management (15') ( Slides )	M. Yamauchi (KEK)
09:25	Issues of the meeting + announcement (15') ( Slides ) agenda, Belle tour, weekly report, Belle2 Note, TDR	Y. Ushiroda (KEK)
09:40	Belle disassembly schedule/status (15') ( Slides )	S. Tanaka (KEK)
09:55	PNNL (20') ( Slides )	David Asner (PNNL)
10:15	Luther College (20') ( Slides )	Todd Pedlar (Luther College)
10:35	break (20')	
12:15	Lunch (1h15')	
13:30	Chair: L. Pilonen (Virginia Tech) - SuperB project status (50') ( Slides )	David Hitlin (Caltech)
14:20	SuperKEKB accelerator (40') ( Slides )	M. Iwasaki (KEK)
15:00	break (20')	
15:20	Chair: T. Browder (Univ. of Hawaii)- Preliminary motivation for beam polarization (20') ( Slides )	K. Hayasaka (Nagoya Univ.)
15:40	Online luminosity monitor (20') ( Slides )	V. Zhilich (BINP)
16:00	ZDLM for SuperKEKB (20') ( Slides )	S. Uehara (KEK)
16:20	Commissioning procedure and construction schedule (10') ( Slides )	Y. Ushiroda (KEK)

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# Funding status and process for final approval

## Budget secured

	JFY2009	JFY2010	JFY2011	JFY2012	JFY2013	JFY2014
Oku-yen	30.5	82.6	10.5	26.8	6.6	1.8



Need additional ~180 oku-yen.

- ✓ July: Review by a committee of MEXT
- ✓ August: Decision by MEXT
- ✓ October: CSTP review
  - December: Approval by Ministry of Finance
  - March 2011: Final approval by the Diet

- Regular KEK budget
- Foreign contribution
- Additional budget requested to MEXT

Foil by M. Yamauchi



# SuperKEKB groundbreaking

- Unless the proposal is denied by the Diet, we will have a groundbreaking ceremony on April 8, 2011.
  - Symposium
  - Press conference
  - Contributions to CERN Courier, Symmetry, interactions.org, etc.
  - Party
- All of you are cordially invited to the party.

Idea to organize a „PXD“ event at KEK



## Rising American Interest in Belle II ...



Strong delegation from SuperB at this workshop, among them:  
D. Hitlin (Deputy Director of the SuperB Project)  
B. Wisniewski (Technical Coordinator of the SuperB Detector)  
H. Jawahery (previous BaBar spokesman)

New Applications for Membership in Belle/Belle II at this Meeting:



Pacific Northwest National Laboratory  
Application to join Belle & Belle II Collaborations

David Asner



Application for Membership in Belle II

Todd Pedlar

Luther College  
Decorah, IA USA

# Special issues to be discussed in this B2GM

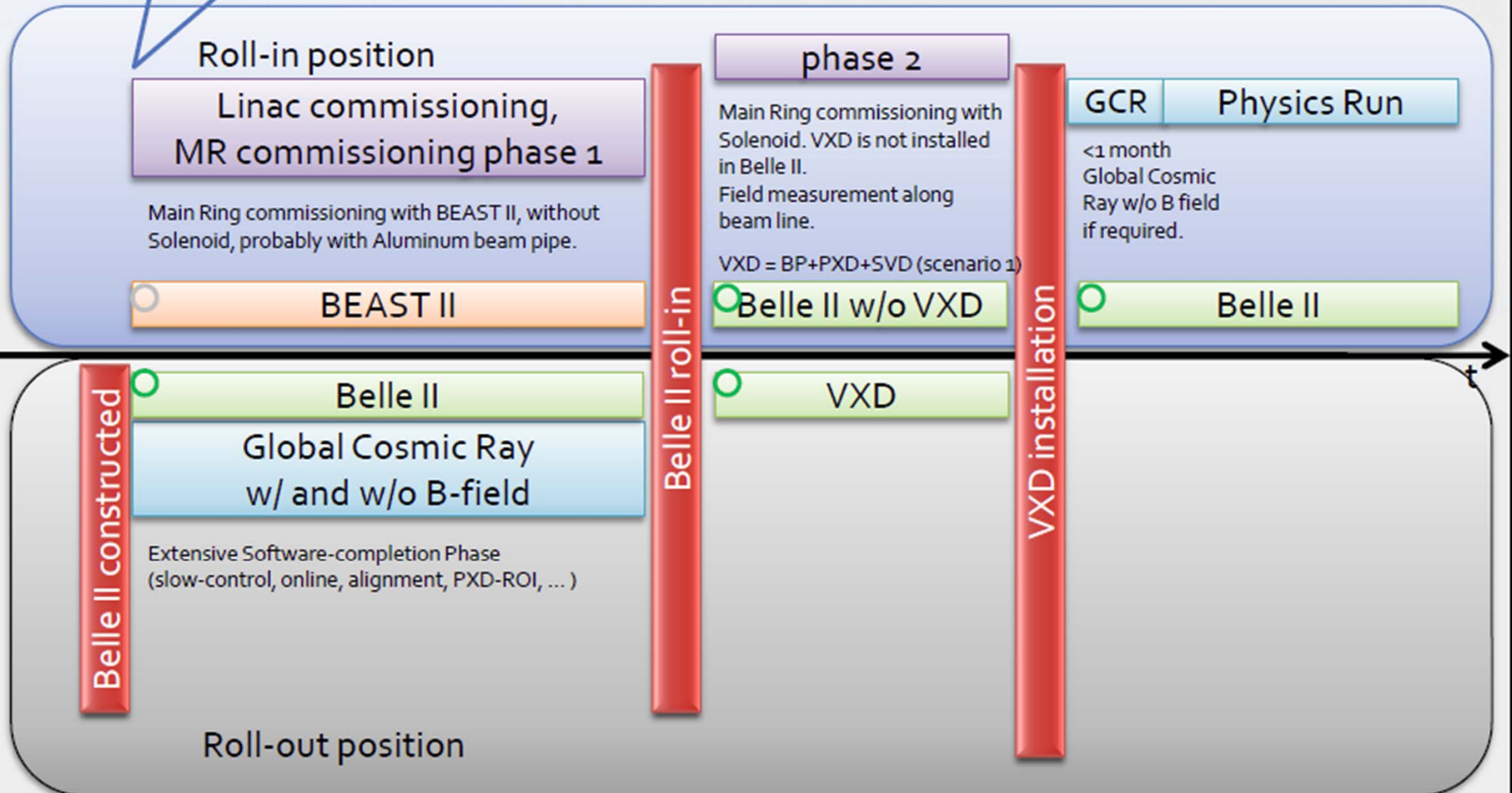
1. Fast (30Hz) luminosity measurement
  - ECL (limited by statistics?)
  - ZDLM (background?)
2. Slanted SVD (baseline) vs. Simple barrel (?)
  - Detector performance, cost, service space, mechanical feasibilities, ...
3. Quartz bar thickness
  - 2cm (baseline)  $\leftrightarrow$  2.4 or 3cm (?)
  - Better PID or better calorimetry
4. Upgrade of KLM barrel inner 1-3 layers
  - Background level tolerable with RPCs?
5. Service space in and around the detector
  - Detector disassembly has started; good chance to see the real stuff
6. Practical issues on Software, Online/Offline database, slow-control,  
...

Slide from Yutaka Ushiroda

# Commissioning procedure

Yutaka Ushiroda

No earlier than 2014.10



# Announcement from Comp/Soft

Day 2 (Nov. 18<sup>th</sup>) 9:00 – 11:00 @Rm# 325

## two tutorials

If you like to start something of Belle II software, please join these tutorials

- How to use the Data Store and Relations  
by Martin Heck (Karlsruhe)
- Belle II Software Development Tips and Tricks  
by Andreas Moll (MPI)

## discussion

We would like to start discussion about the Database.

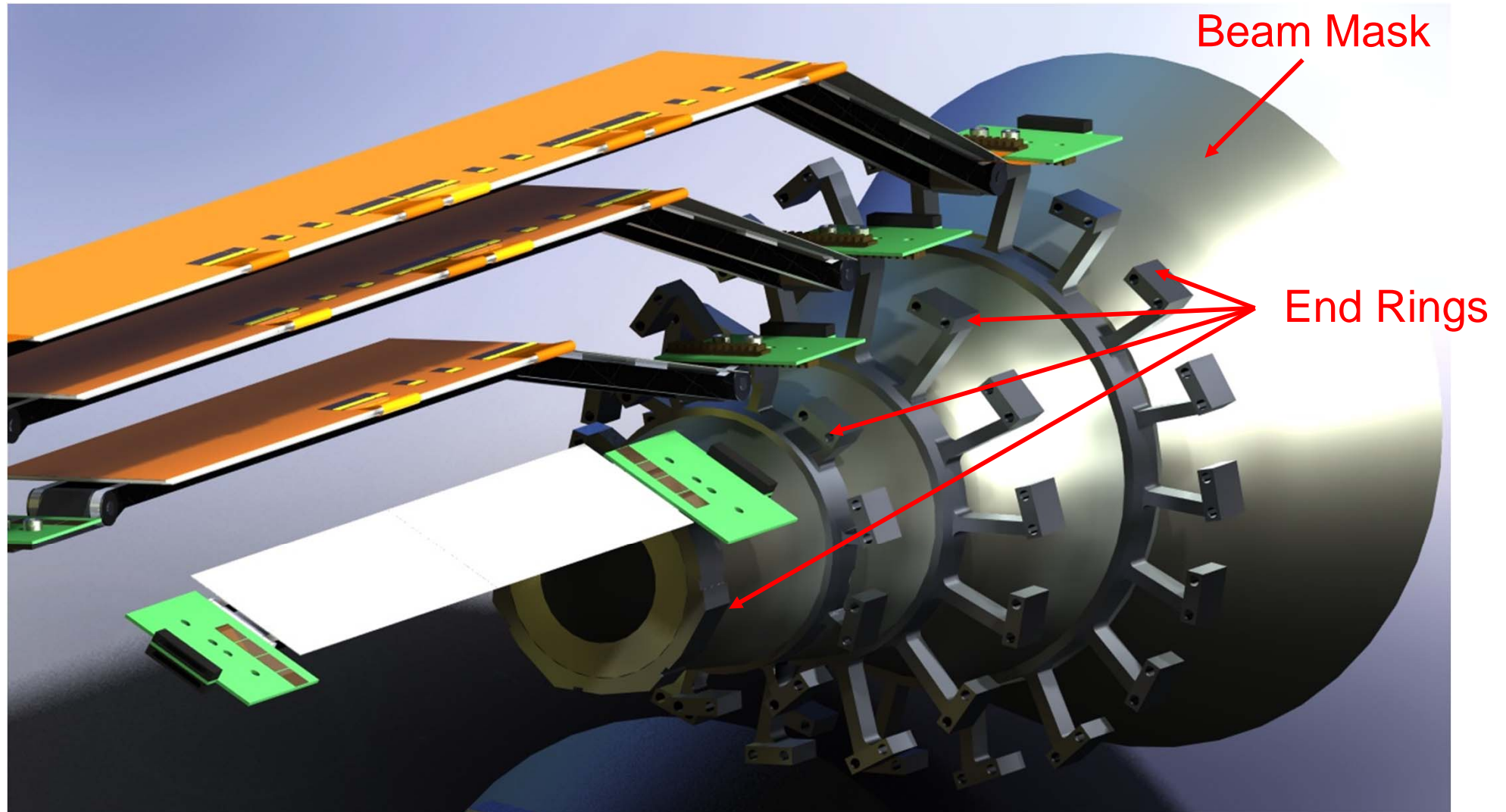
Every input from sub-detector group is essential. Everyone is welcome.

- Discussion on Database  
by Marko Bracko (Ljubljana) + T.Hara (KEK)



SVD: Decision on „slanted“ or „straight“ version

# Forward Region “Old Solution”





# Items from Ushiroda-san's List

- **Performance**
  - See next presentation by Zbynek
- **Cost**
  - Barrel needs +31 sensors ( $\approx +150\text{k€}$ ), +310 APV25 chips & additional FADCs ( $\approx +150\text{k€}$ ), FTBs, Copper boards,...
  - Total  $\approx +400\text{k€}$
- **Service Space, Mechanical Feasibility**
  - No problem (see Immanuel's talk on mechanics)
- **Beam Masks**
  - Not affected at important location (close to IP)



# PXD-related Issues



Here no summary of PXD session, such as:

Progress in PXD6 production (Jelena)

ASICs Production and Test (Hans)

Mechanics & Cooling (will be presented today)

Instead concentrate on some issues which came up during the meeting:

Patch panel location

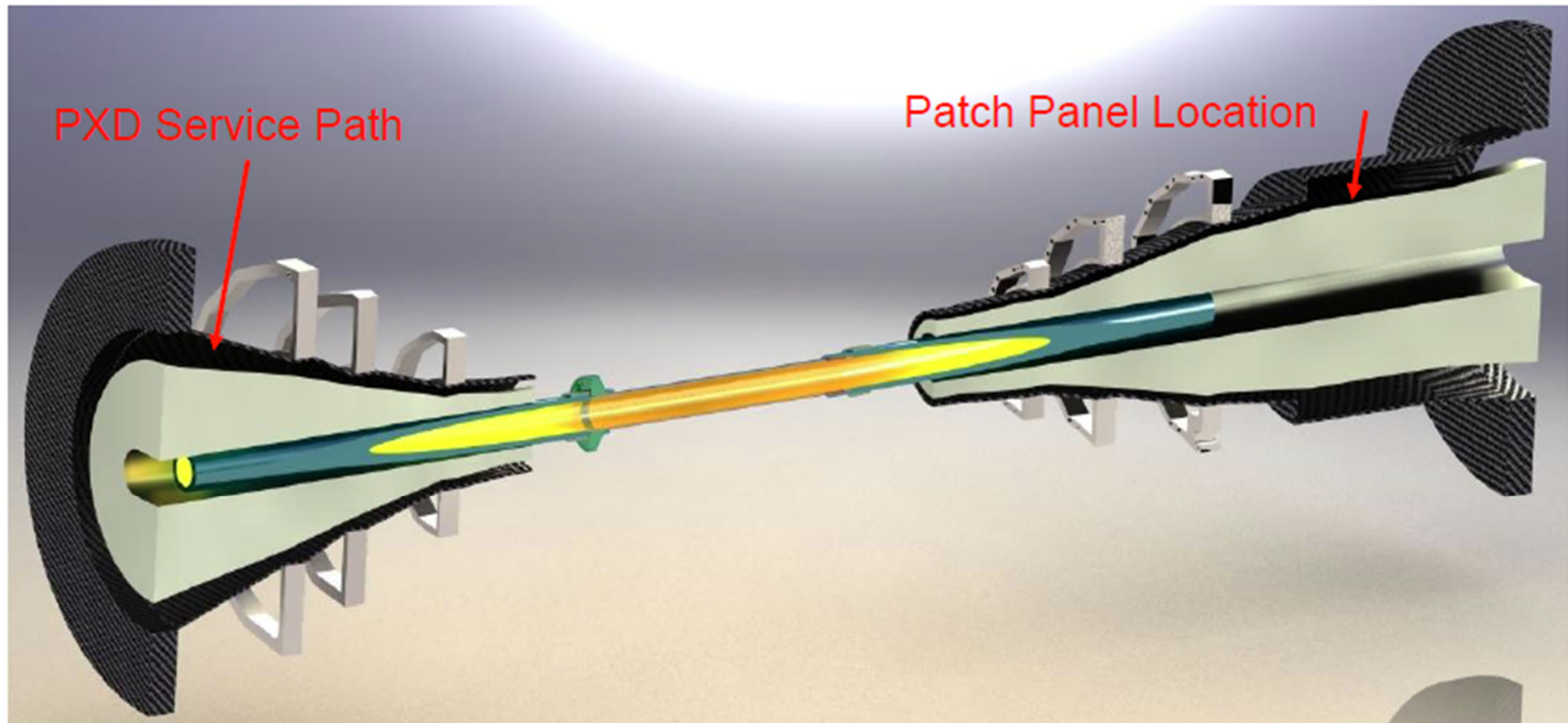
cable length

new beam pipe

# Current Concept

(Immanuel Gfall)

- PXD services outside of Mask
- Masks can be tightly fit around beam pipe



- LMU (Prof. J. Schieck's group) is lead institution of the P/S project
- 2 Spanish groups (involved in P/S project) had to resign
- German ministry (BMBF) encouraged (but did not substantially fund for now) the LMU (and TUM)

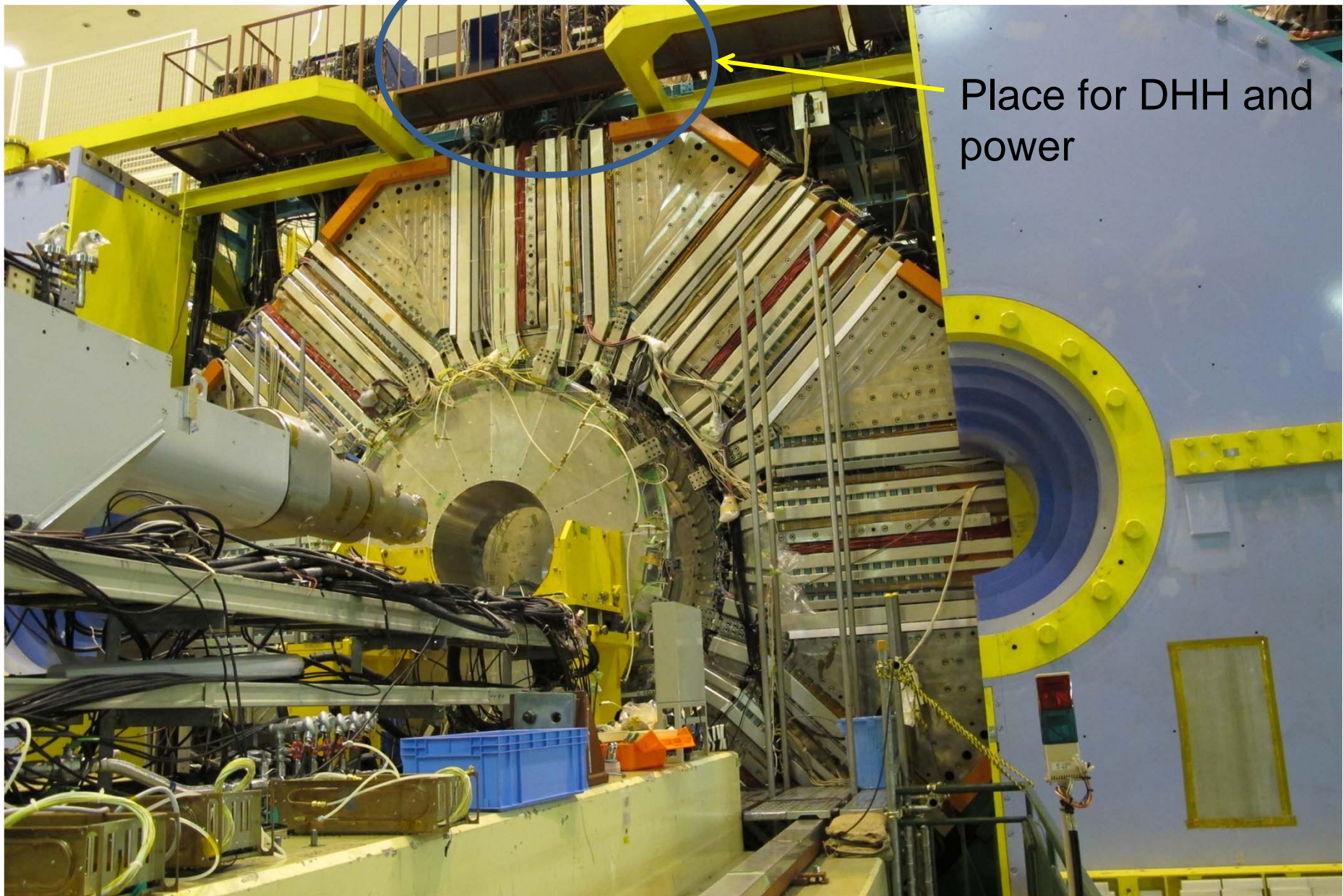
manpower problem evident in the P/S area

- Solution:
  - start collaboration with informatics group of Prof. A. Knoll (TUM)
  - pilot project: development of the P/S controller firmware  
(1 man-year estimate, paid from Common Fund)
  - possible long term perspective:  
Knoll's group may be interested in Slow Control Project of Belle II

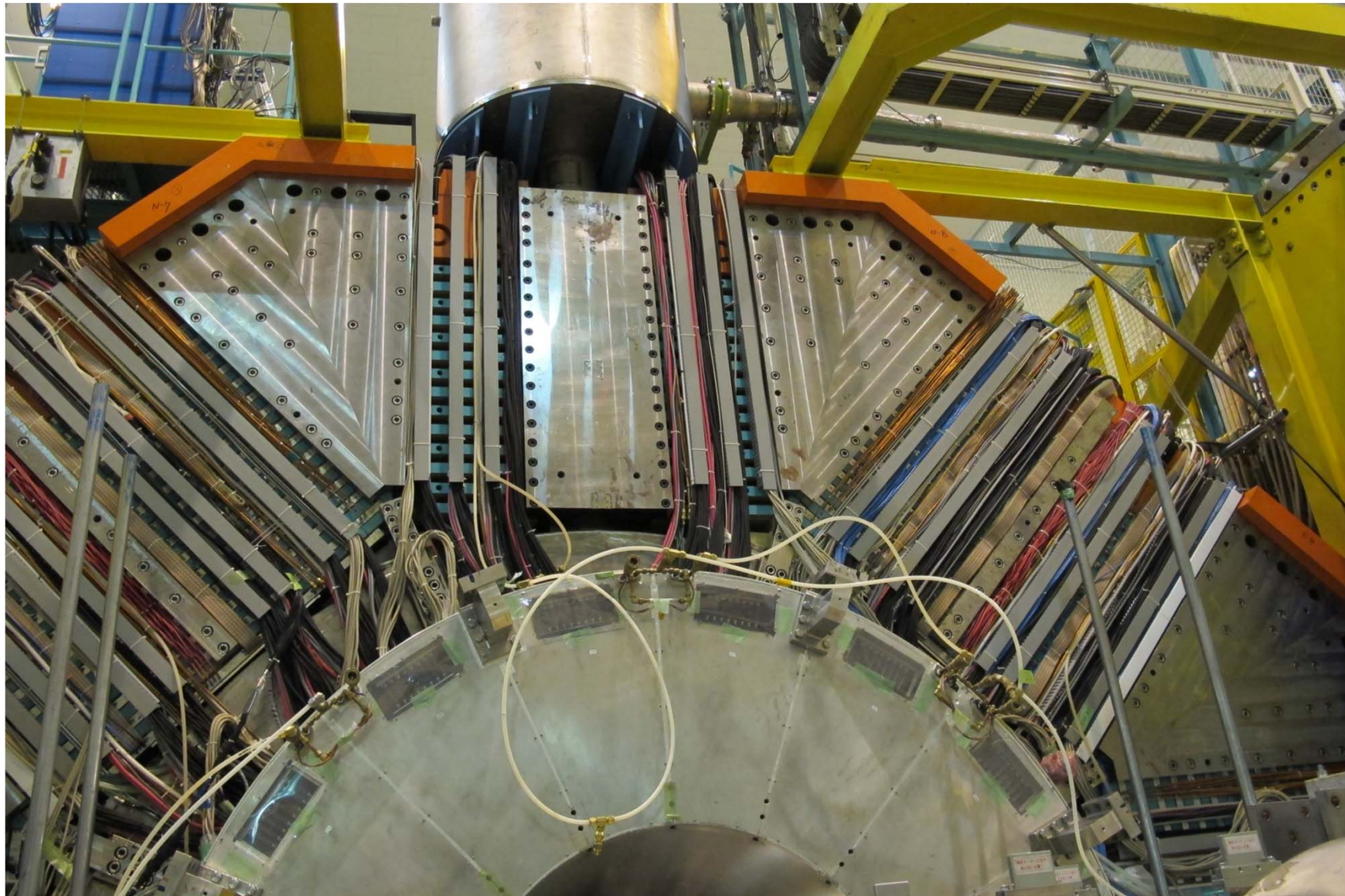




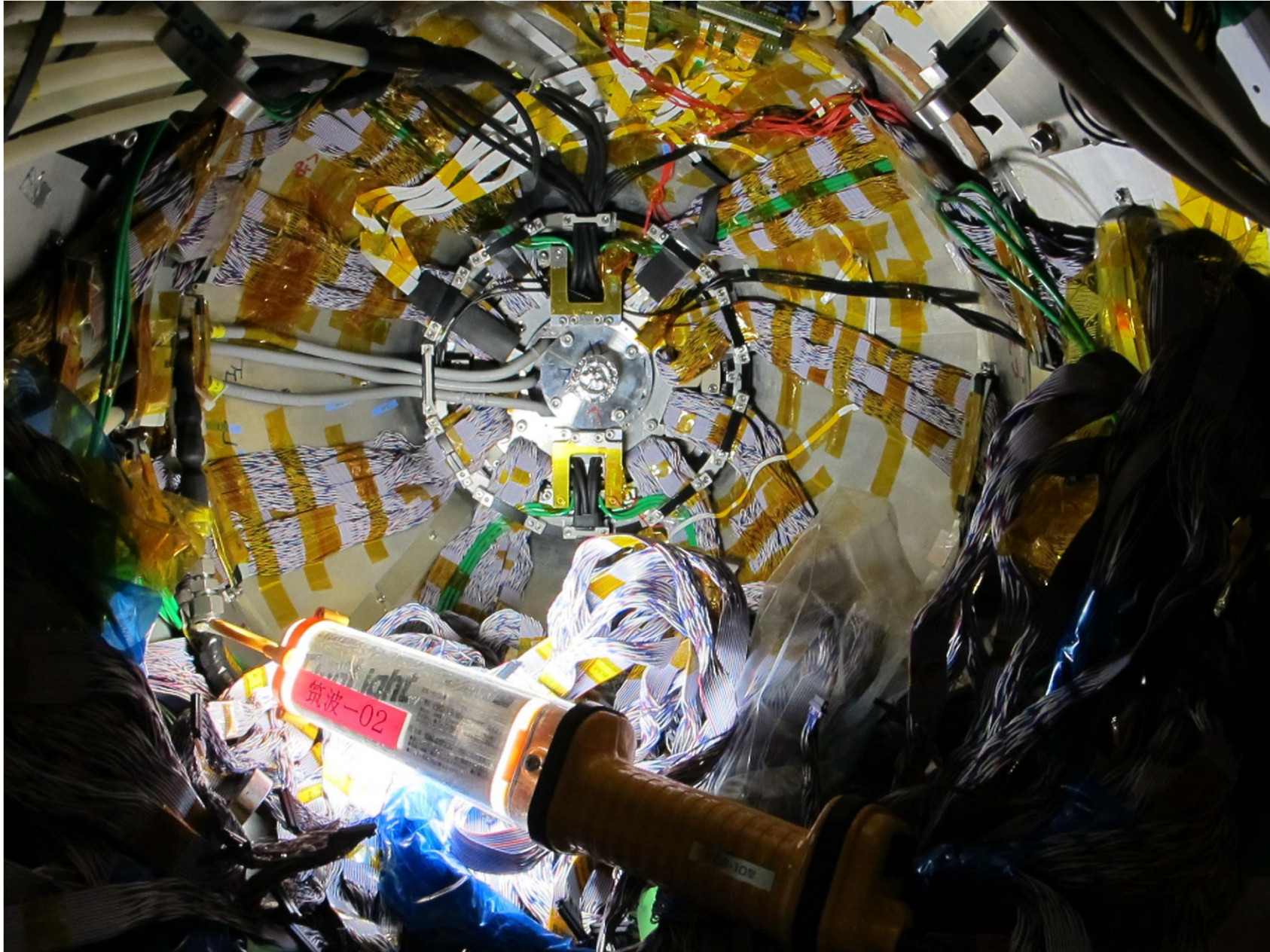




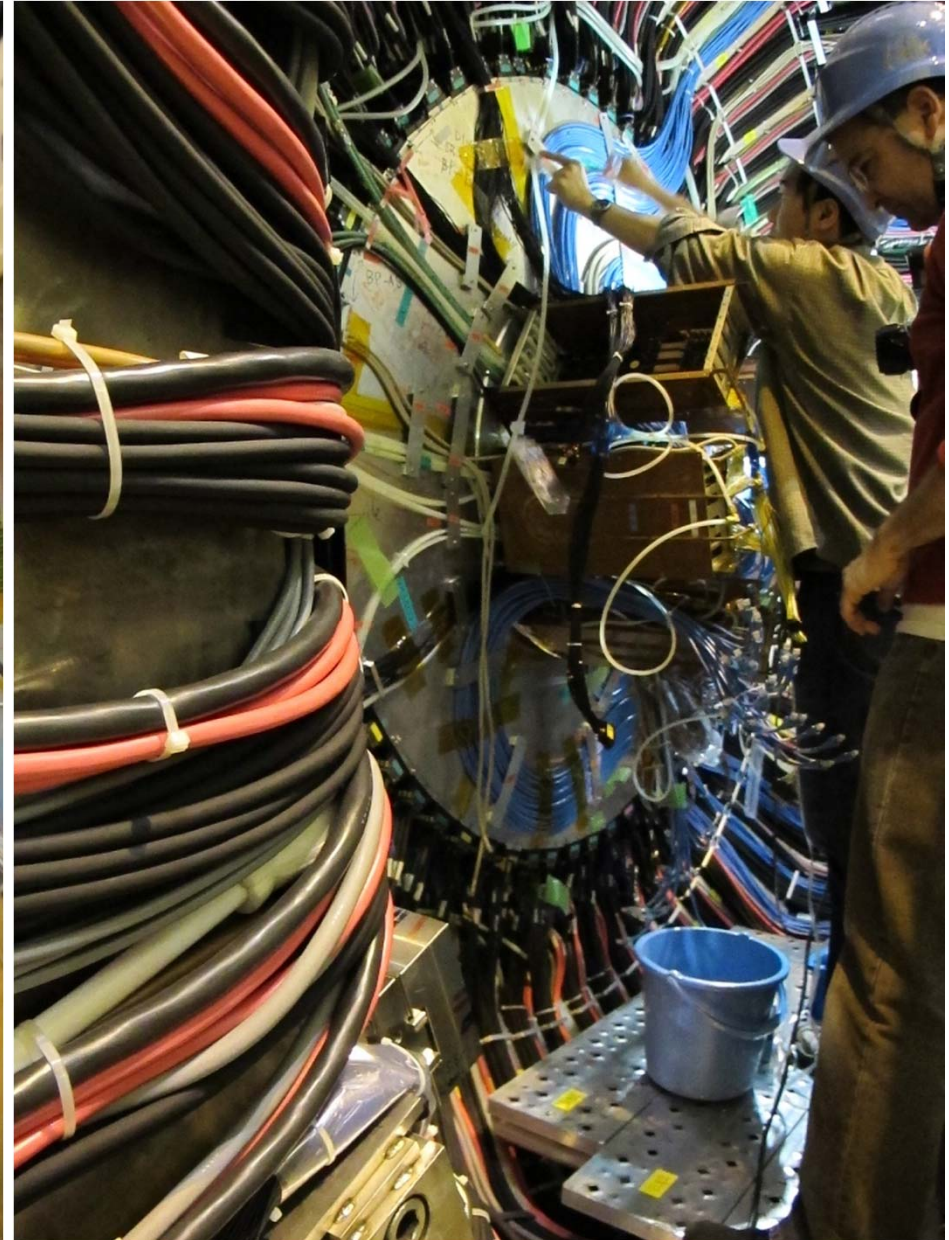








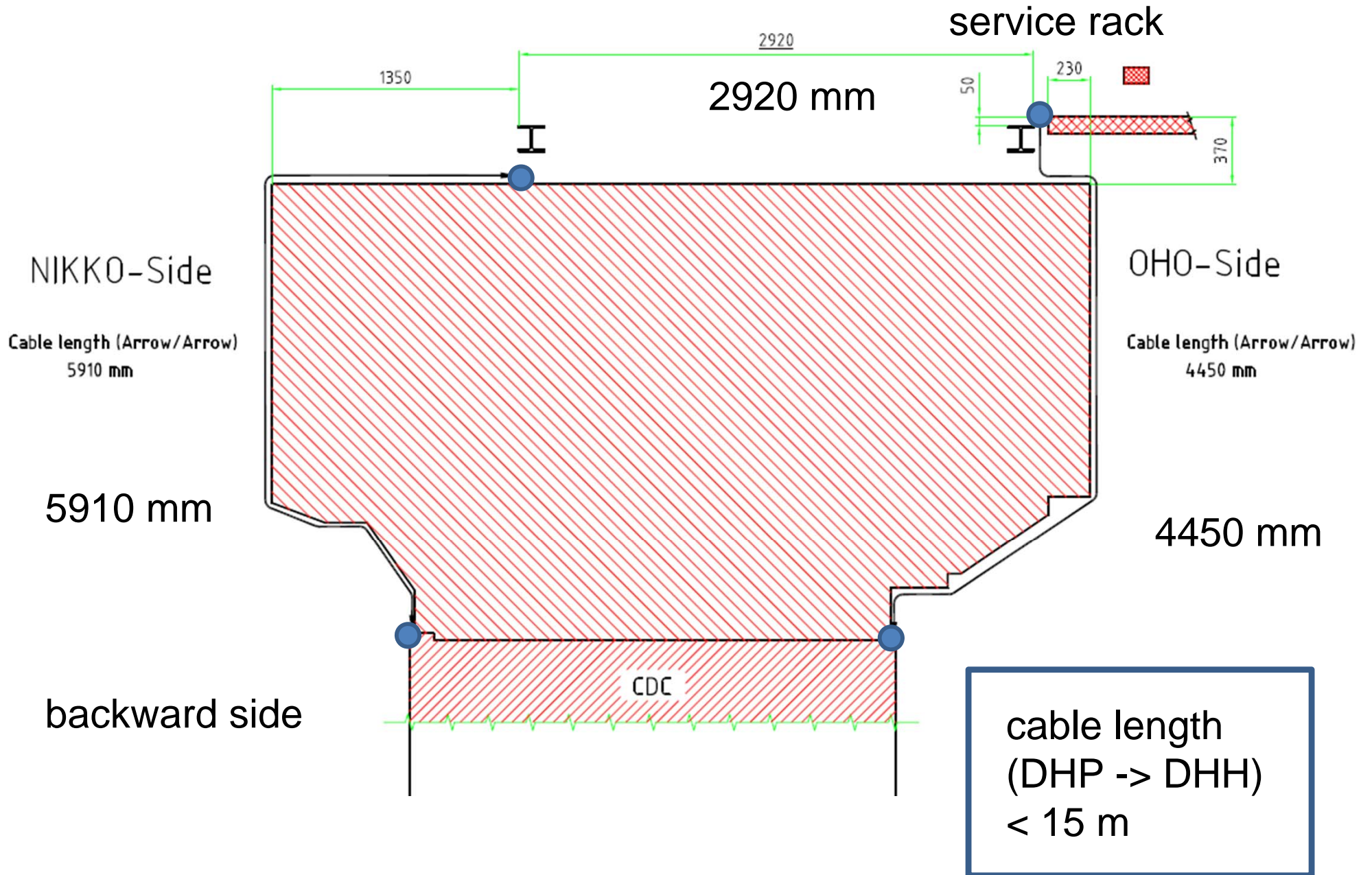


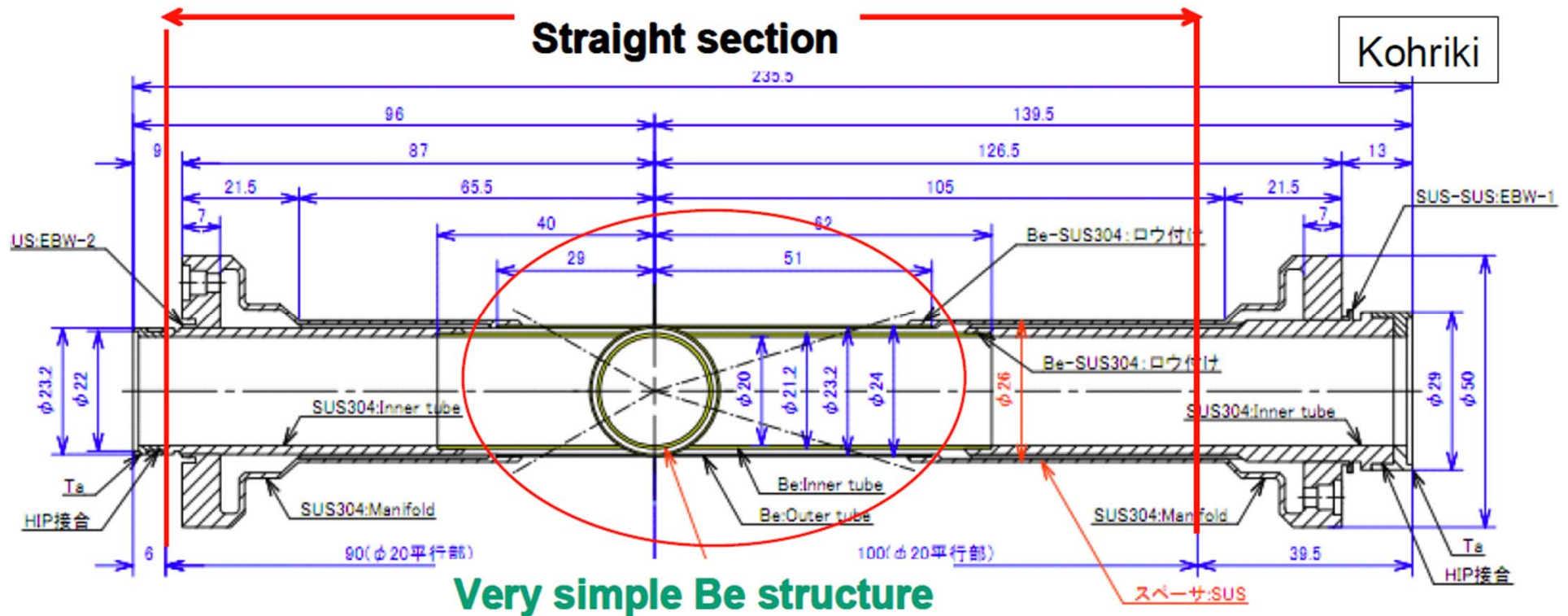








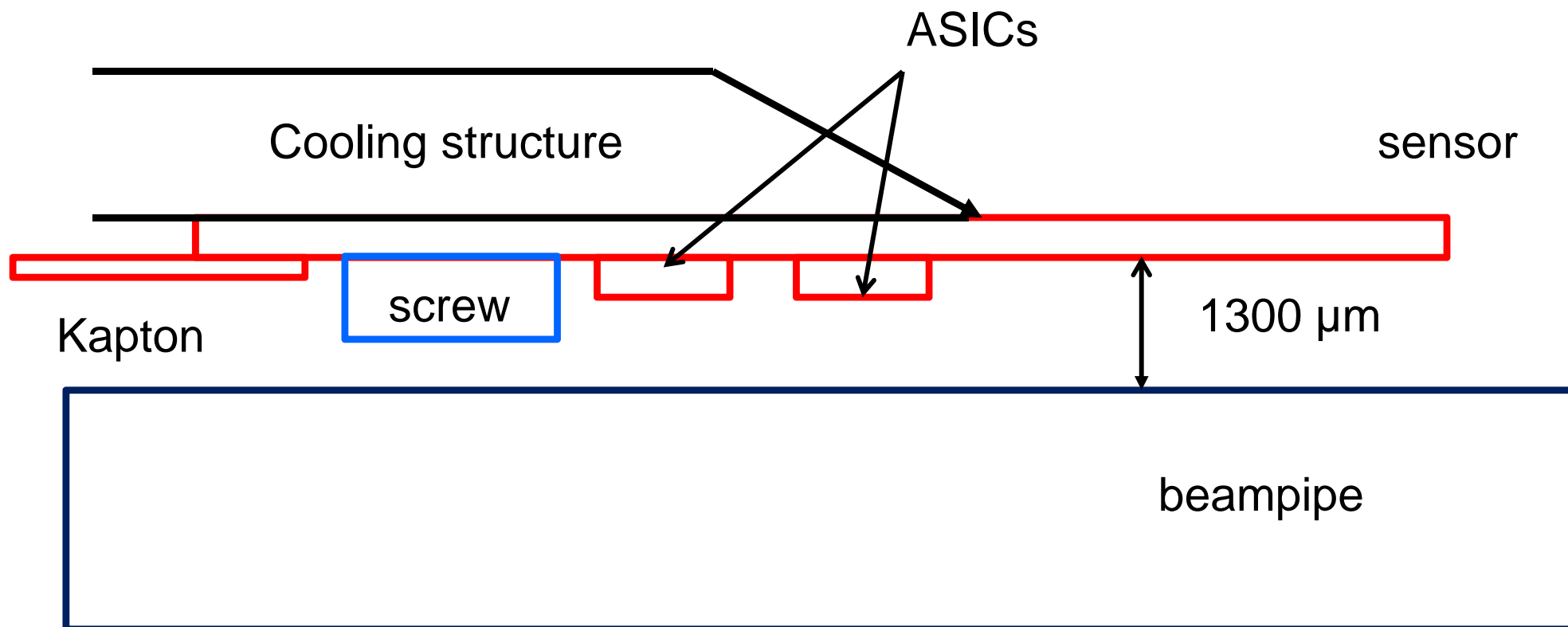




Short Be part, additional SS part -> outer radius increased!!  
 new radius: 12.7 mm +0 -0.1 (was 12.0 mm !!)

Consequence: very little clearance between SS and PXD ladder  
 attention: screws, ASIC + caps + wire bonds ...  
 PXD ladder @14 mm

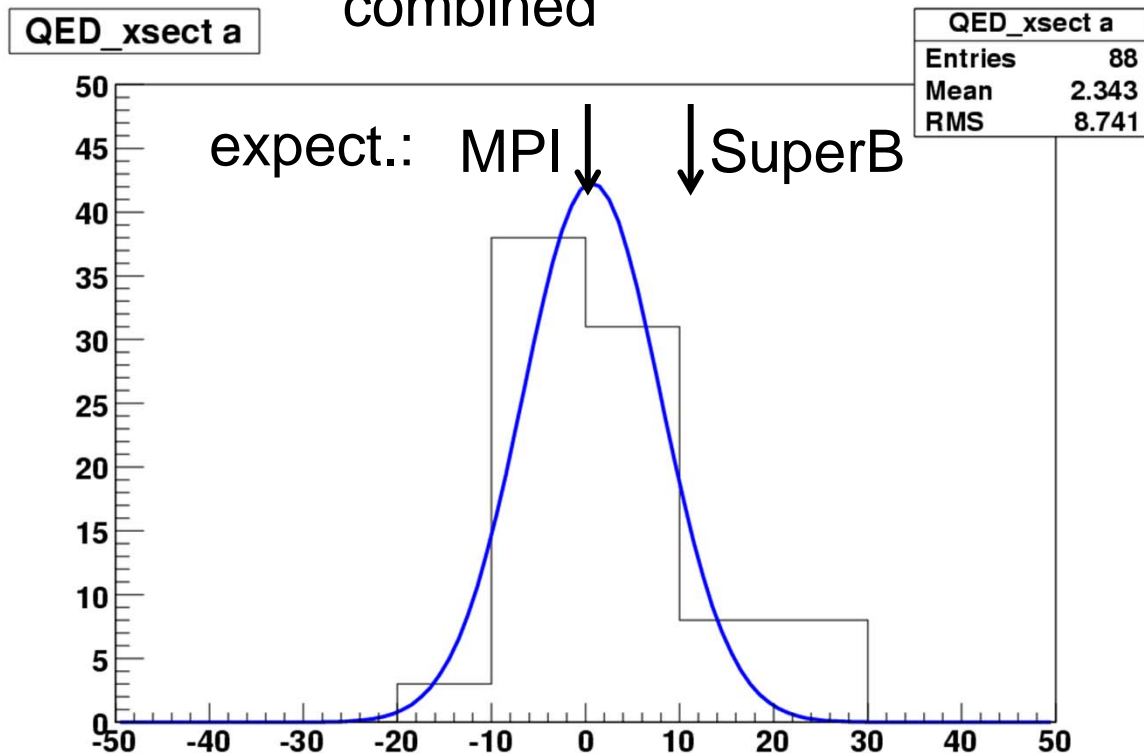




critical: clearance to screw (height now 1200  $\mu\text{m}$ ) only 100  $\mu\text{m}$  !

way out: increase hole in ladder: 4500  $\mu\text{m}$  diameter (now 1500 !)  
then screw head can be reduced -> clearance 400  $\mu\text{m}$   
(proposed by Charly Ackermann)

all layers (z and phi)  
combined



Gauß-Fit including  
all layers:

$$N_{hits} = 0.7 \pm 7.3$$

Expected hits from KoralW  
(averaged over the layers):

$$\langle N_{hits} \rangle = 0.65$$

$$\langle N_{hits} \rangle = 10.4$$

(SuperB MC)

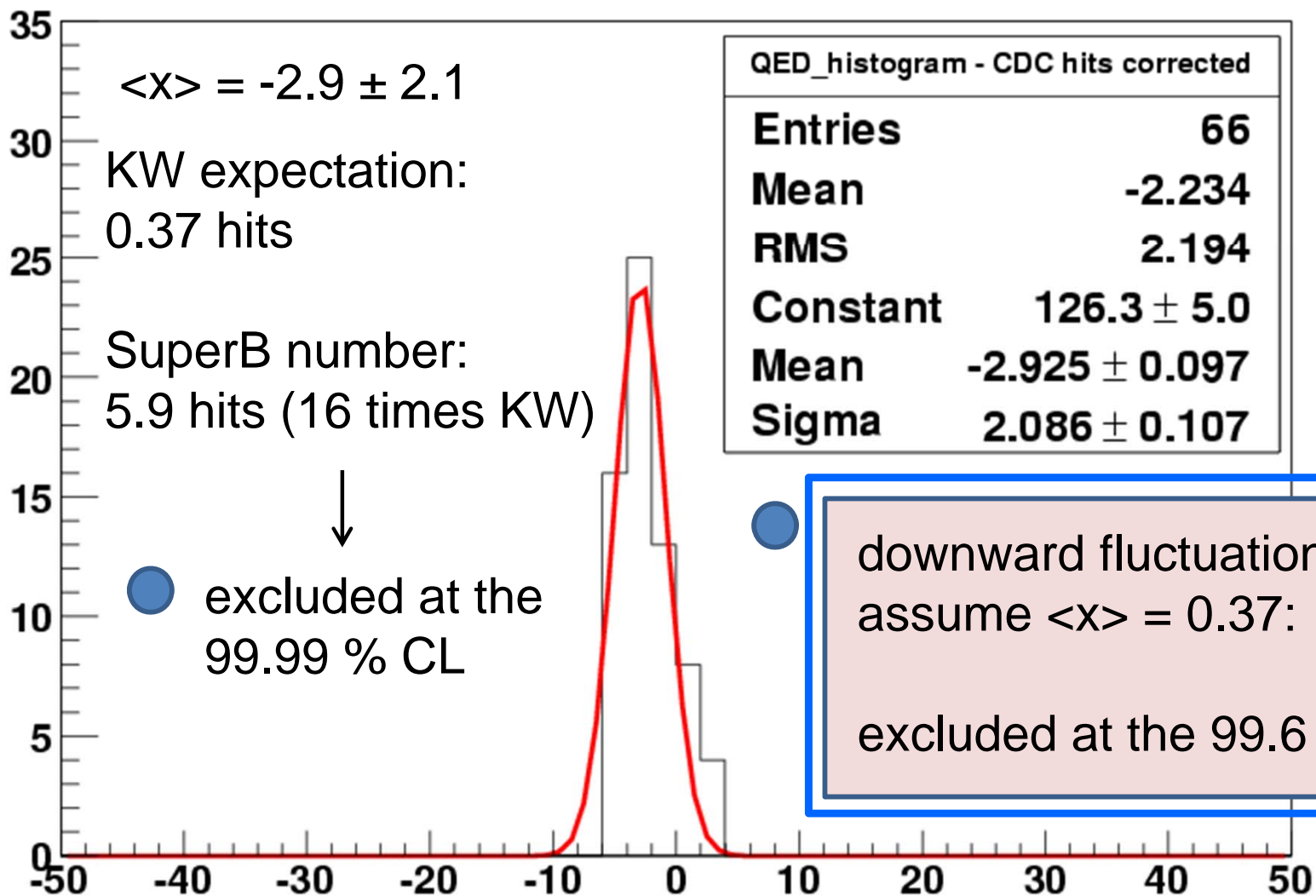
excluded at (only) 80% C.L.

Cross check analysis:

$$N_{hits} = -5.8 \pm 9.9$$

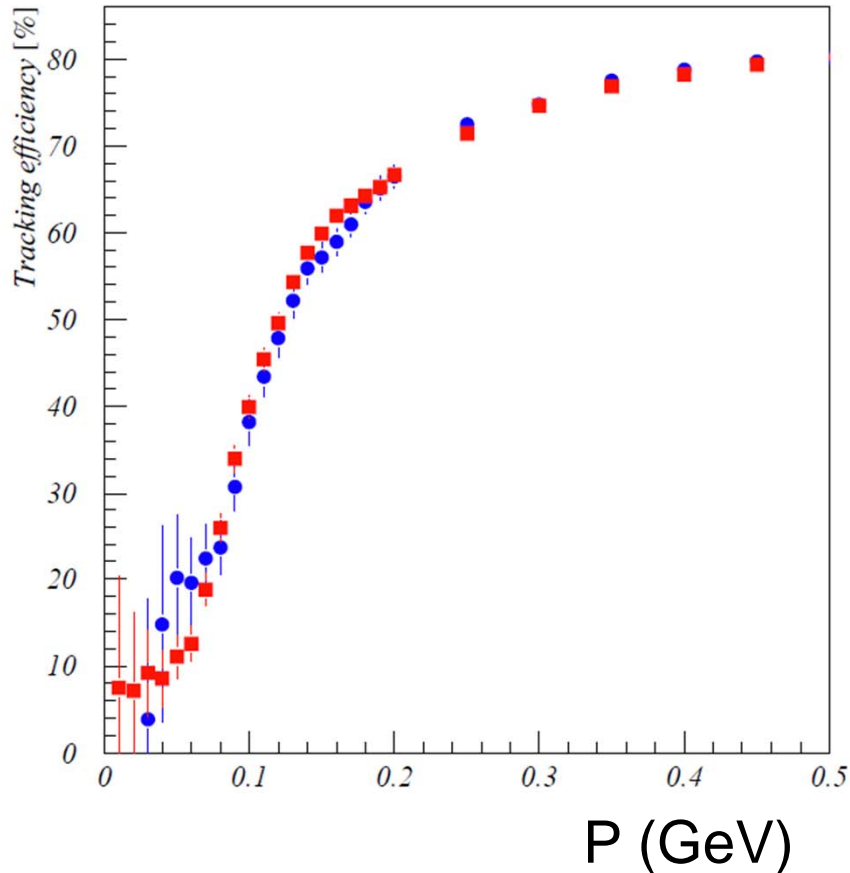
2nd - 4th SVD layer, hits corrected - all exp.

(layer 1 excluded)

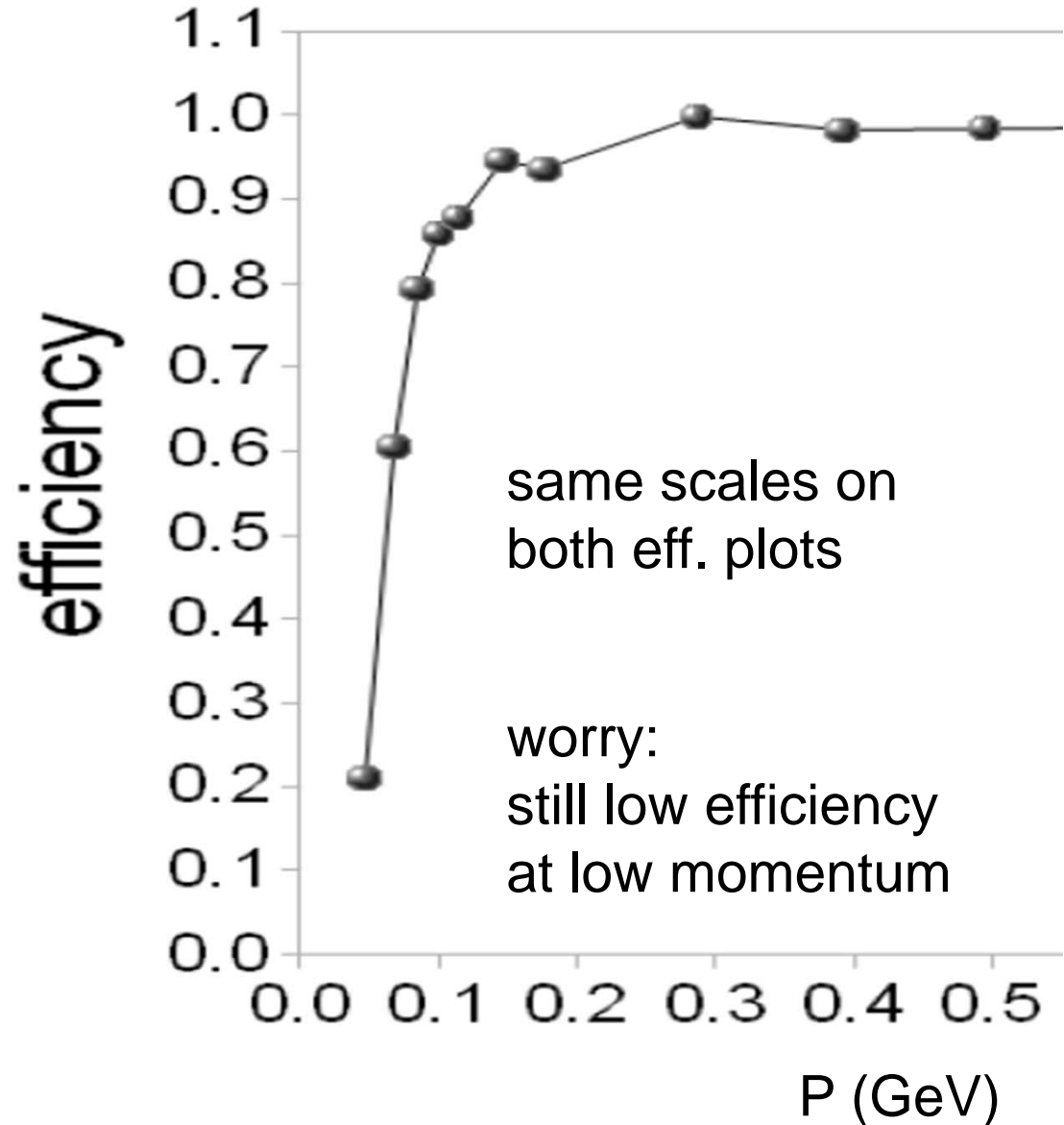


expectation: MPI  $\uparrow$   $\uparrow$  SuperB

Full reconstruction, Belle  
SVD + CDC



Hough with SVD, Belle-II



Vienna group sees problems in guaranteeing high efficiency at low ( $< 100$  MeV) momenta

Also Hough transform has its limitations ...

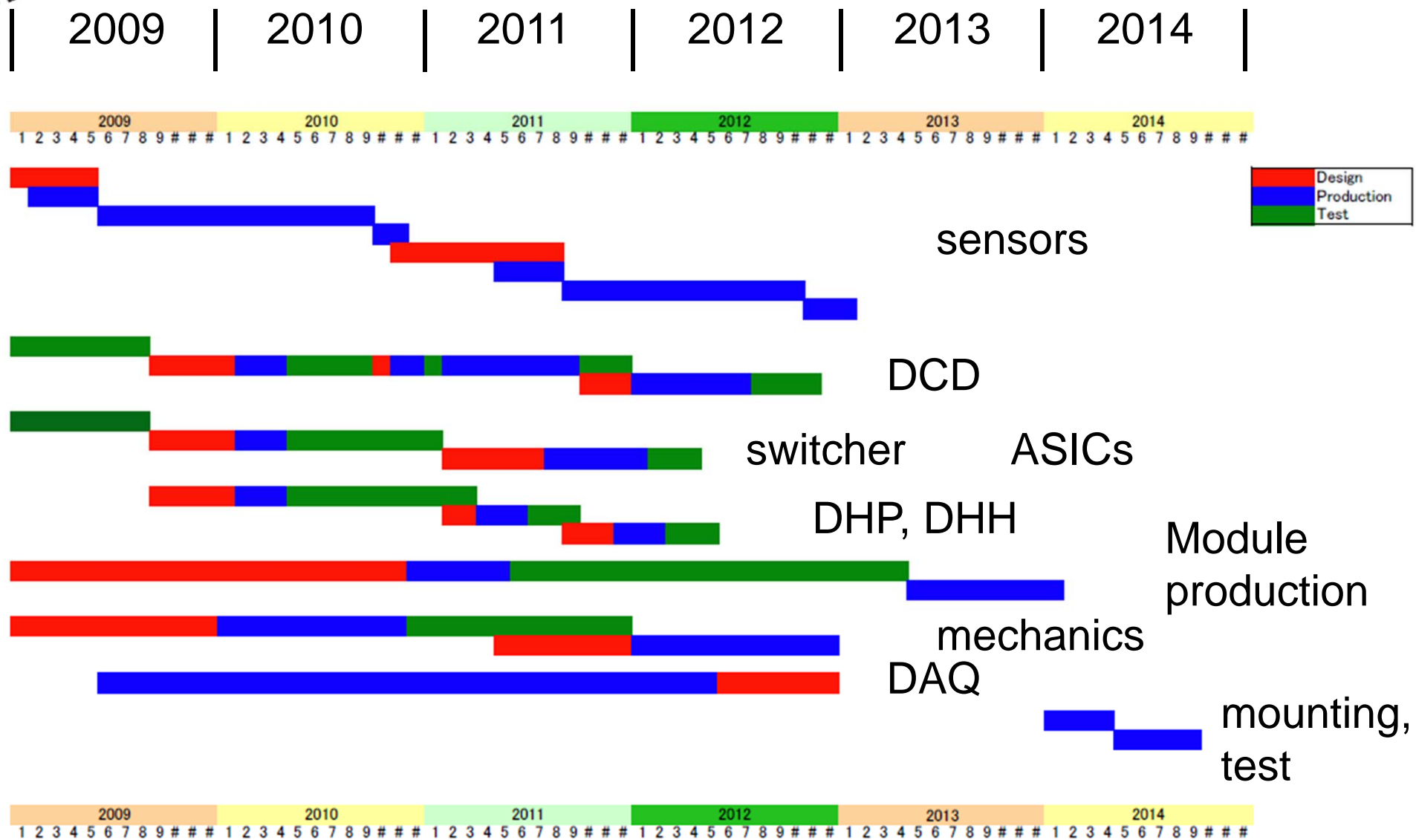
New thought:

Use energy deposition in PXD ladder to „tag low momentum hits“

Idea: Due to Bethe-Bloch ( $dE/dx$ ) pions with  $p < 70$  MeV will have large analog signals (factor 3-4 over MIP)

-> additional algorithm: transfer all hits (clusters) with more than  $3 \times \text{MIP}$  ( $= 15000 e^-$ ) -> may saturate

study necessary to optimize saturation point ( $e^- / \text{LSB}$ )



we gain another 6 months

(prepared by Hans-Günther)



- PXD project has gained strength:  
new manpower from Gießen, Bonn, LMU, TUM
- Patch panel location improved, cable length < 15 m to DHH/PS
- Final word on QED rate in PXD: Low value supported, high excluded
- New idea to rescue PXD hits from low momentum pions
- Potential issue with new beam pipe radius increased by 700 $\mu$ m  
need now a concrete EOS design
- Overall schedule somewhat more relaxed now
- Suggest to think about contribution to the Ground Breaking Ceremony  
by the PXD Collaboration