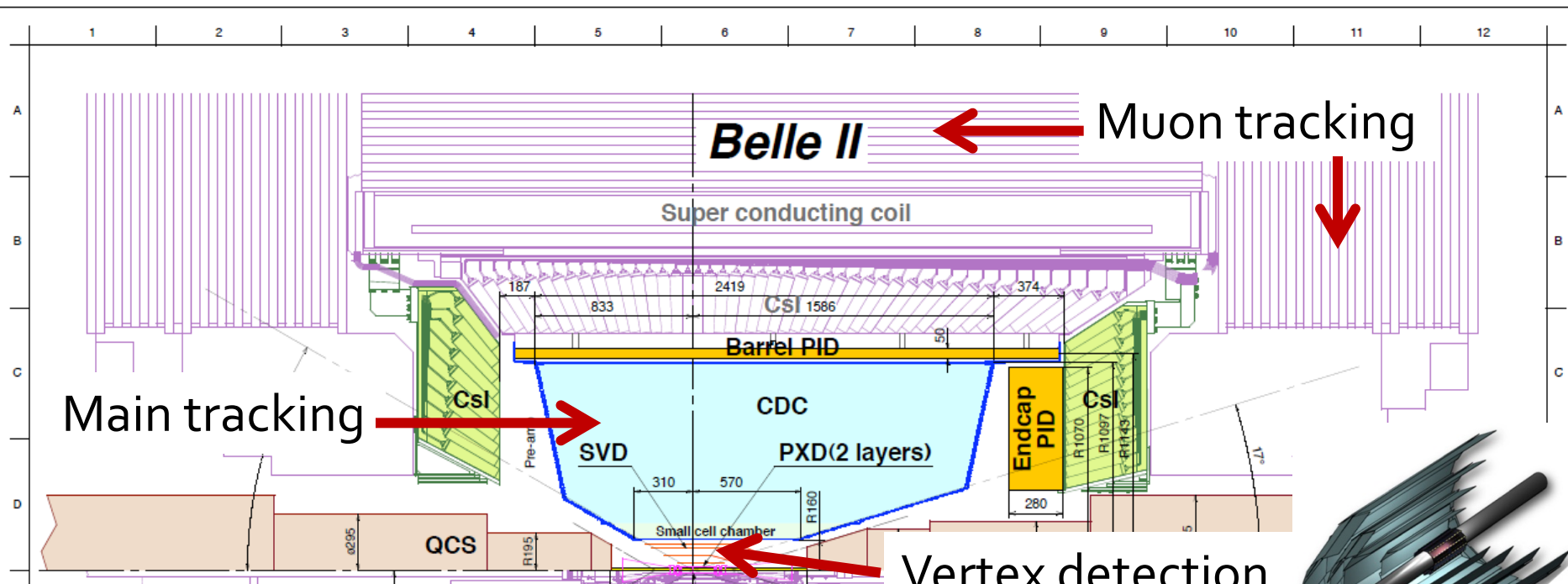


# Tracking system for Belle II

**Vertex detection and tracking:** 2 DEPFET layers + 4 DSSD layers

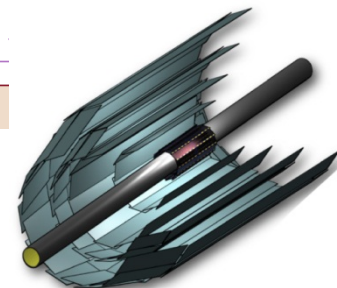
**Main tracking:** CDC, small cells, long lever arm

**Muon tracking:** KLM, RPC + Scintillator + SiPM (end-caps)



Details: Technical design report

<http://b2comp.kek.jp/~twiki/pub/Organization/B2TDR/B2TDR.pdf>

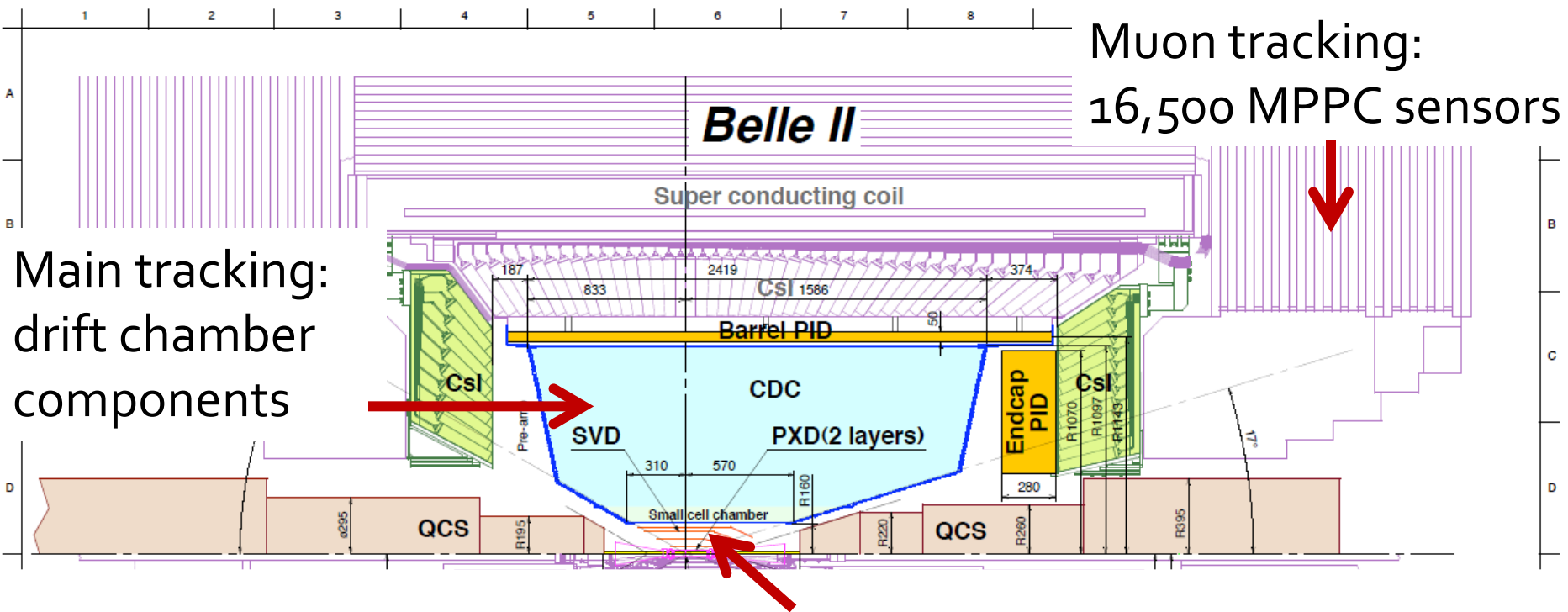


# Tracking system – status 2010

**Vertex detection and tracking:** 40 rectangular silicon strip sensors, 2000 APV25 read-out chips

**Main tracking:** drift chamber components, feed-throughs and pins

**Muon tracking:** 16,500 SiPM (MPPC) light sensors



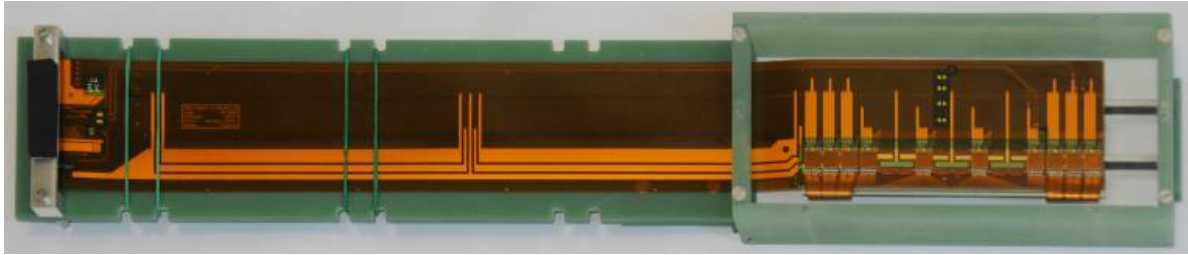
Muon tracking:  
16,500 MPPC sensors

Main tracking:  
drift chamber  
components

Vertex detection and tracking: 40 rectangular silicon strip sensors, 2000 APV25 read-out chips

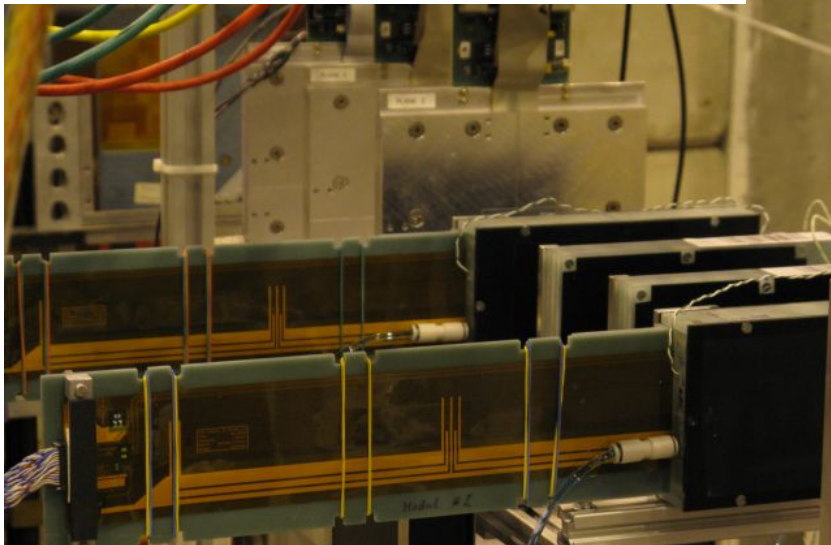
# Tracking system – status 2010

Vertex detection and tracking: 40 rectangular silicon strip sensors, 2000 APV25 read-out chips

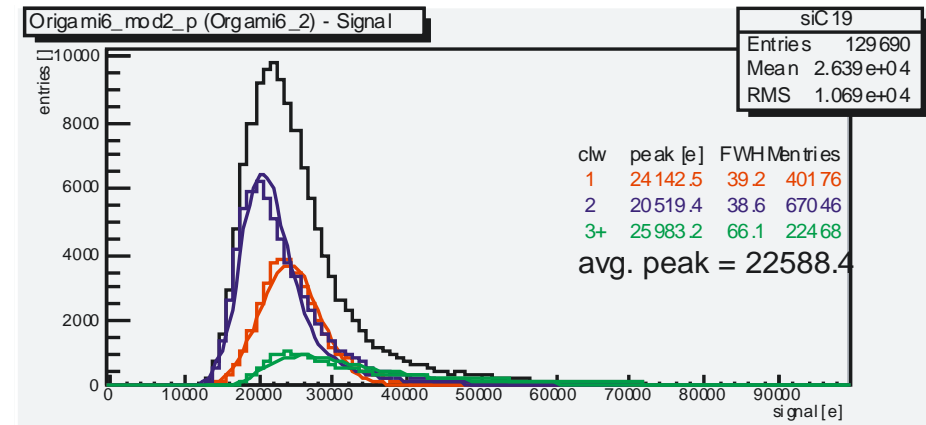


Rectangular silicon strip sensors, mounted in the origami configuration, APV25 read-out chips are on top of the sensors

Beam test at CERN, Geneva



Beam tests of the rectangular silicon strip sensors: layout (left), results - pulse height distributions (bottom)

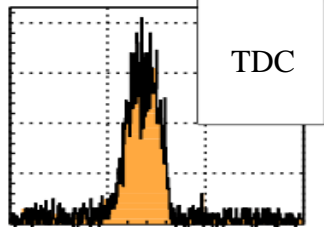
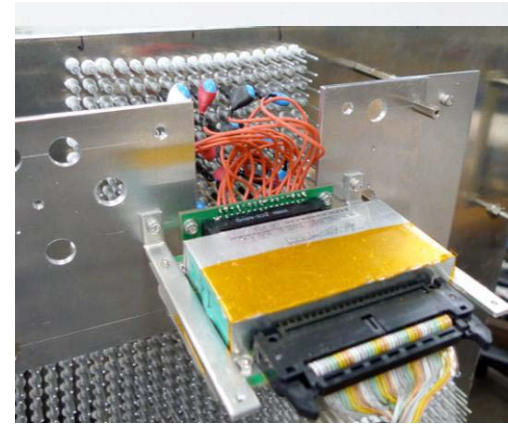
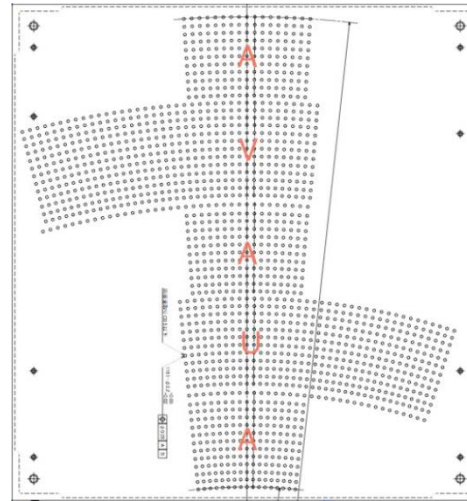


# Tracking system – status 2010

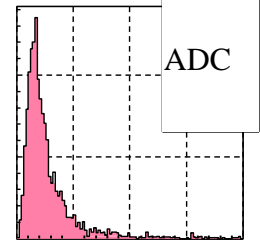
**Main tracking:** drift chamber components, feed-throughs and pins



Drift chamber construction (left),  
electronics mounting (bottom)



Cosmic ray tests of the drift chamber module: drift time (left)  
and pulse height distributions (right)

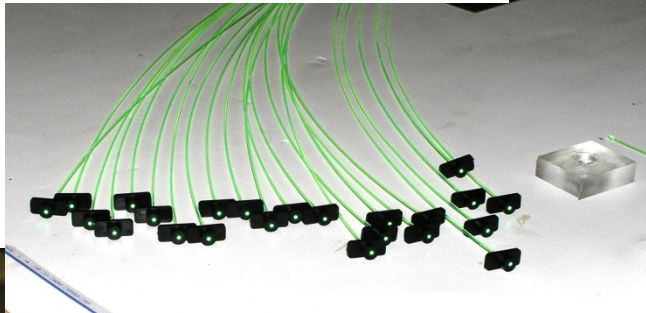




# Tracking system – status 2010

Muon tracking: 16,500 SiPM (MPPC) light sensors

wavelength shifting fibres

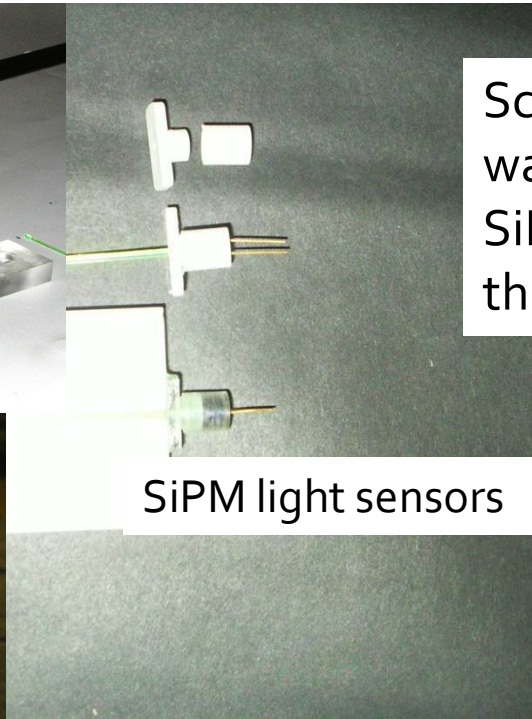


Scintillator strips with grooves, wavelength shifting fibres and SiPM light sensors (attached to the fibres).

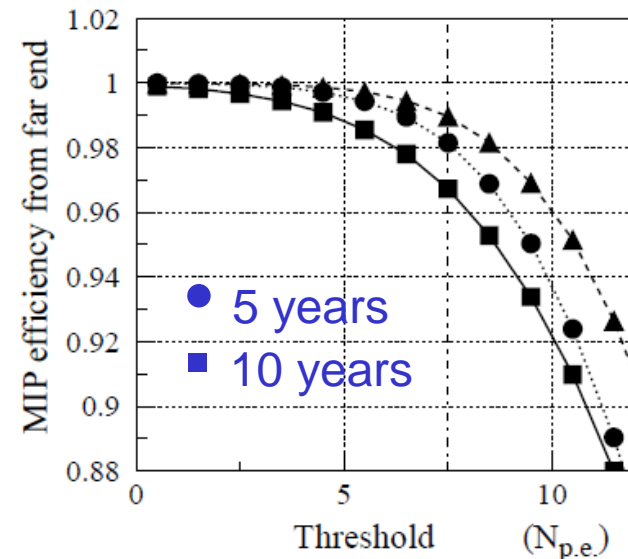
scintillator strips



SiPM light sensors



Module tests after irradiation with neutrons: efficiency for charged particle detection vs threshold level after 5 year and 10 years of operation (right).



# Tracking system – status

## November 2010

Delivered:

- 40 rectangular silicon strip sensors
- 2000 APV25 read-out chips
- drift chamber components, feed-throughs and pins
- 16,500 SiPM (MPPC) light sensors

Silicon strip sensors and APV25 read-out electronics mounted, tested on the bench, in a reactor and in a test beam

Drift chamber components: assembled, tested on the bench and with cosmic rays

MPPC light sensors: tested for radiation hardness

All components ready for further use.