



Asian View of EUDT

Related activities in Asia

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my understanding of EUDT
Asian Contributions for EUDT
Asian expectations for EUDT

my understanding of

EUDET

ILC

BT Facility

Tracker

Calorimeter

Joint
Research
Activity

European

European

Asian

Asian

common
Network & Transnational Access

Joint
Research
Activity
common

Asian Contributions

for examples

Magnet from KEK

Tracker (TPC)

beam test at KEK

MPGD and tests

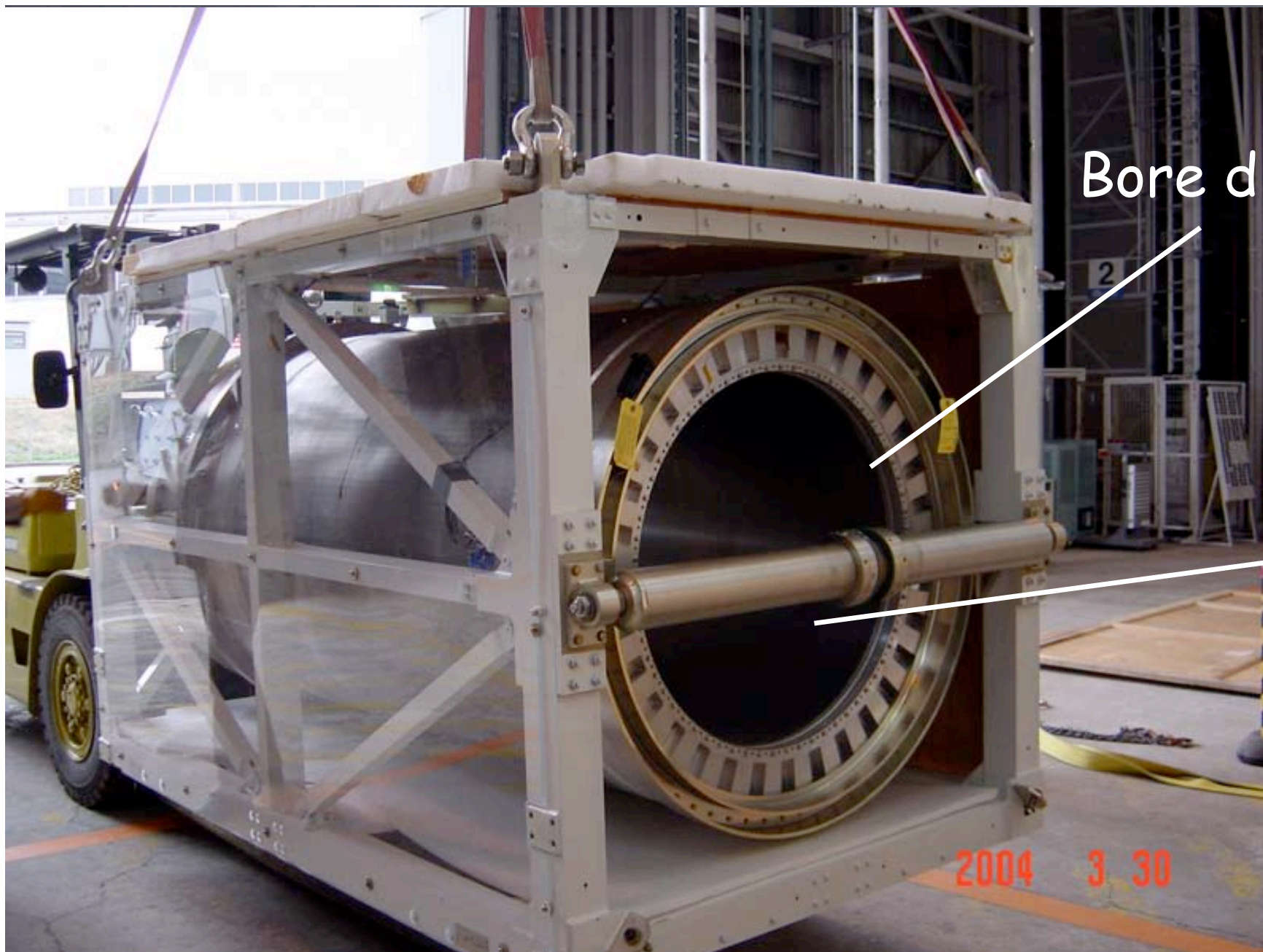
Calorimeter (scintillator CAL)

beam test at KEK

beam test at DESY

Asian Contributions cont.

- superconducting MAGNET for TPC
- portable

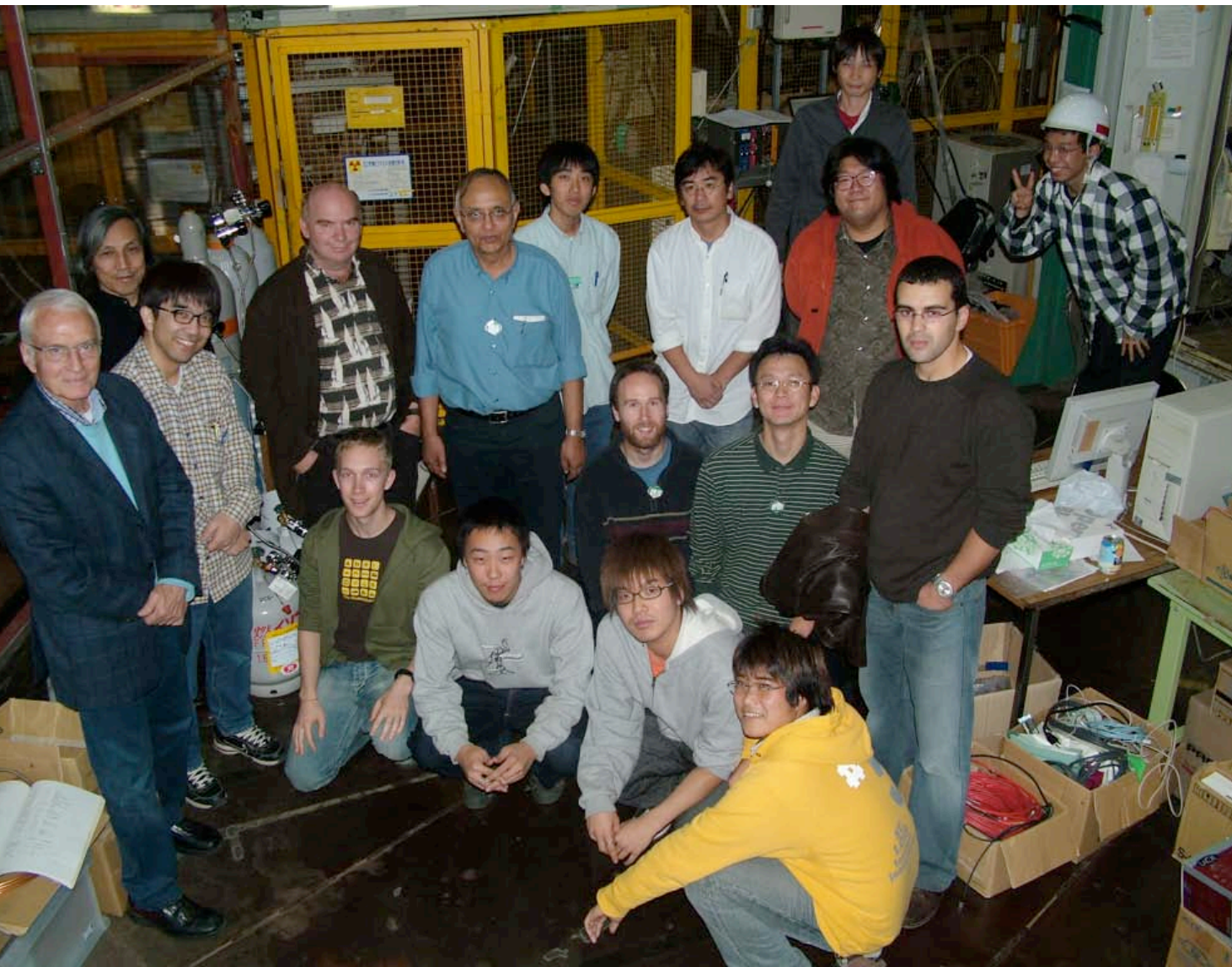


Bore diameter: about 80cm
Length: about 1m

B up to 1.2 T
Field Uniformity
< 1.3% in R
< 0.4% in Z
in the TPC region

Asian **past** Contributions

- TPC group is world wide



DCFJ



Super conducting MAGNET

Asian **past** Contributions

- TPC + **small** prototype

MWPC as reference



GEM



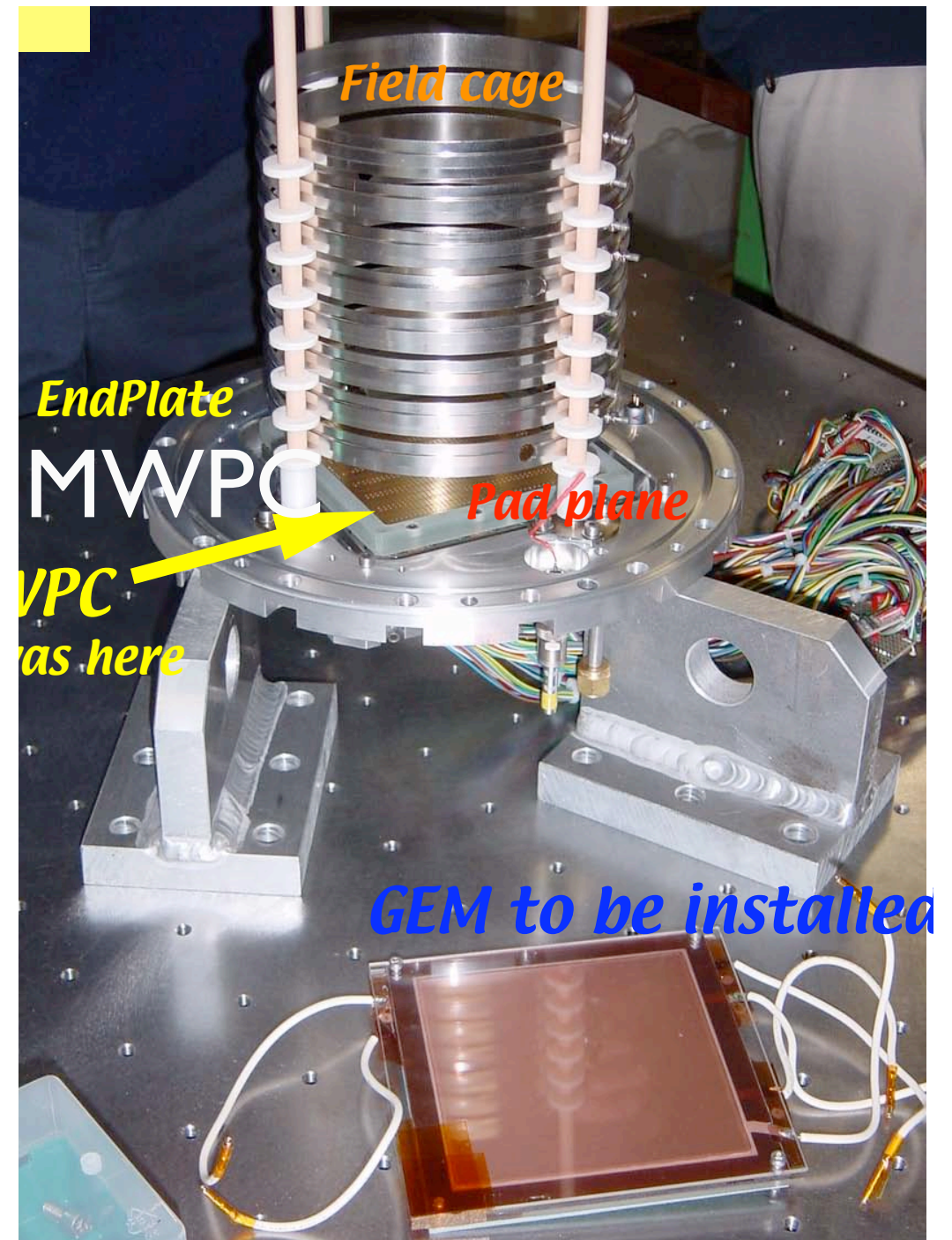
MicroMEGAS

MPGD



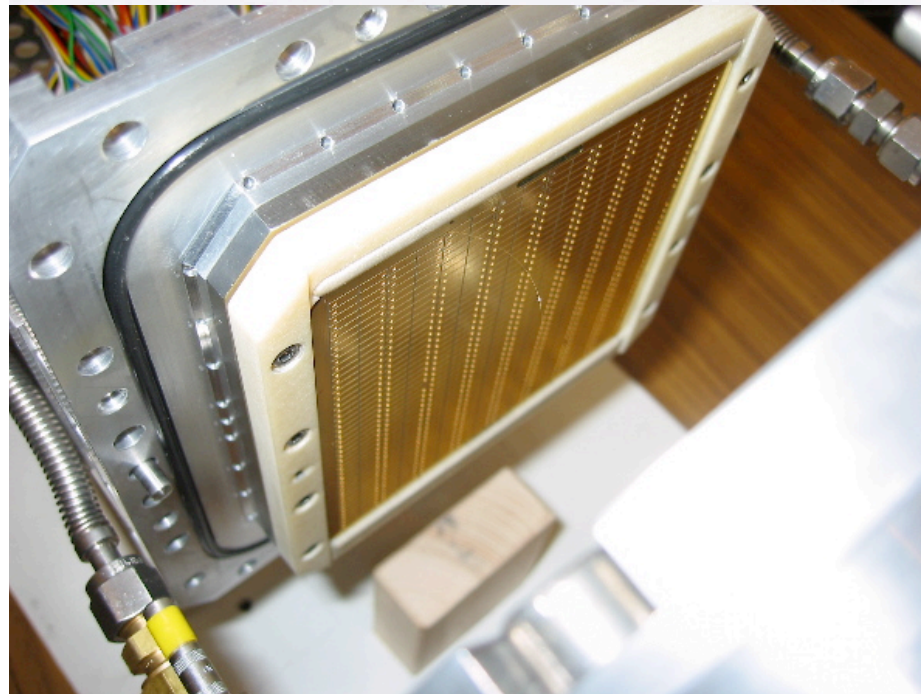
large prototype with superconducting magnet from KEK

MPI-TPC

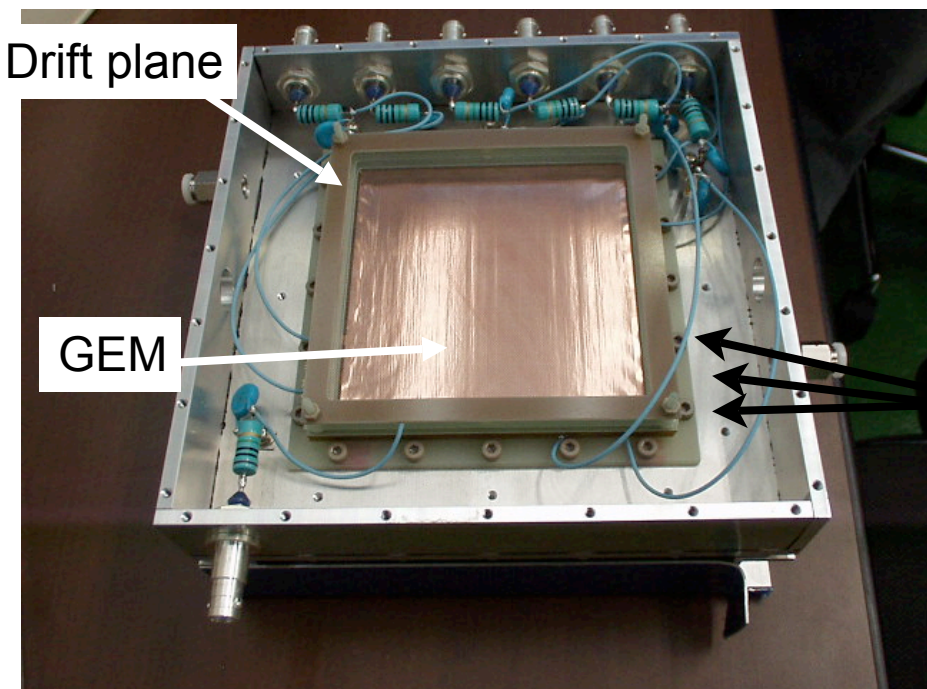


Asian **past** Contributions

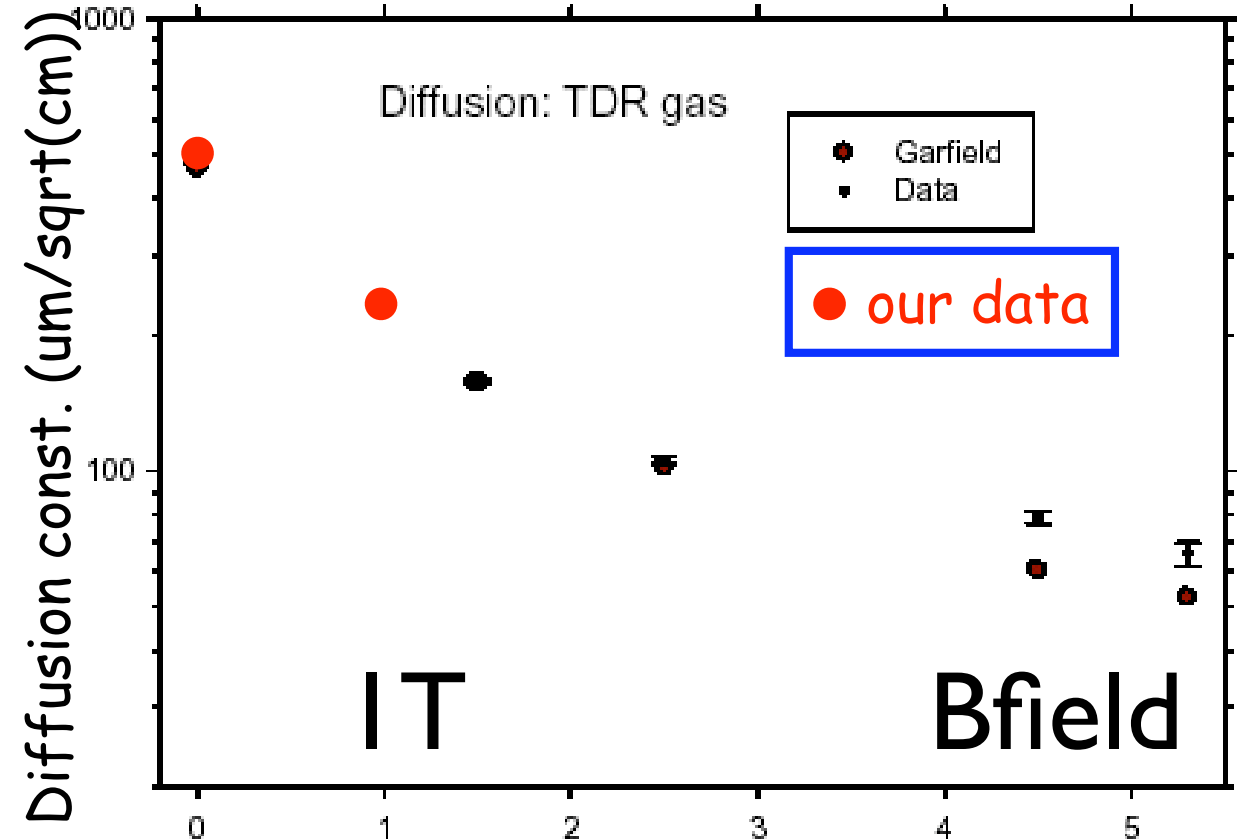
MPI-TPC + MWPC readout



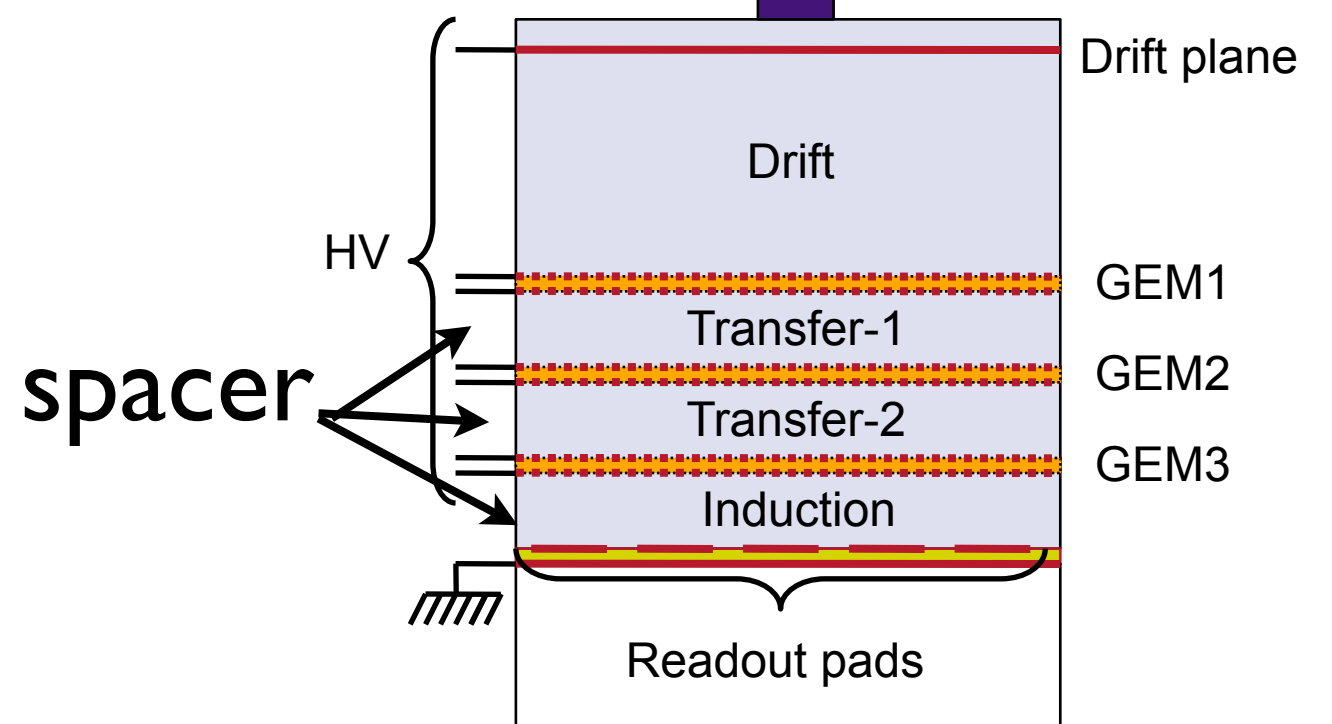
GEM basics



TDR gas diffusion : D.Karlen @Paris



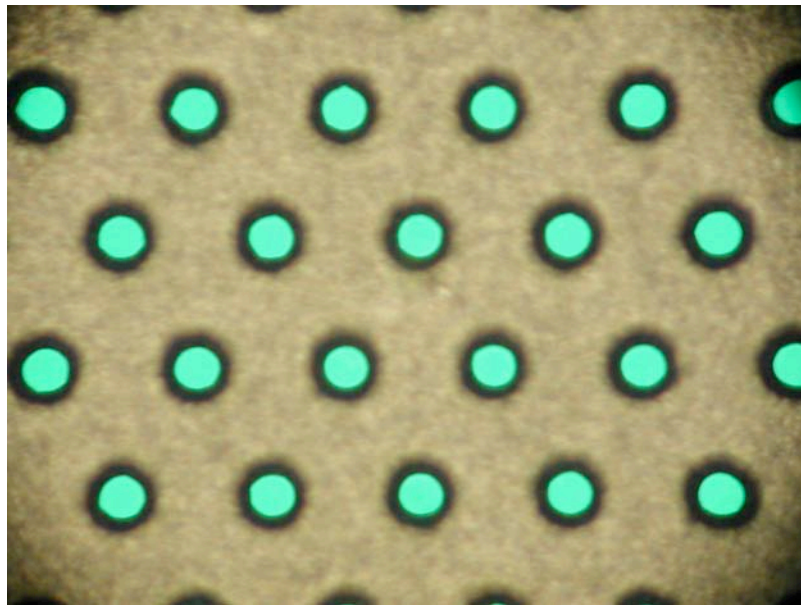
⁵⁵Fe (5.9 keV X-ray) field (T)



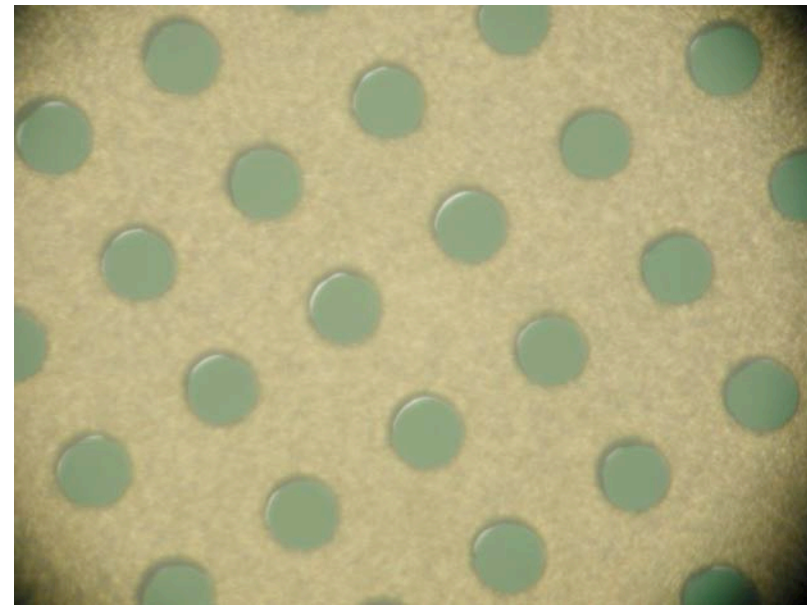
Asian **past** Contributions

- GEM production basics

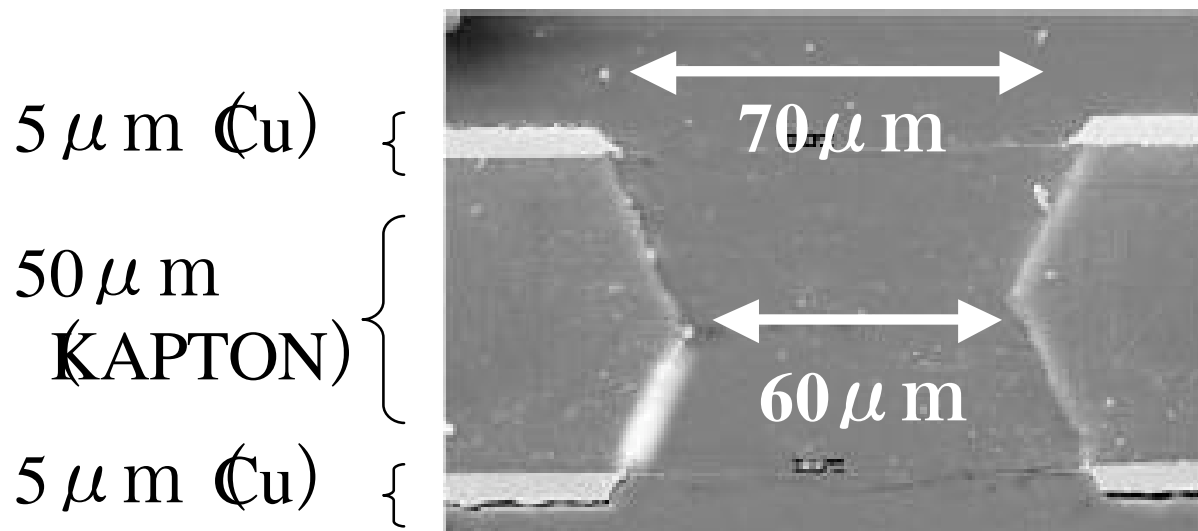
CERN



Fuchigami

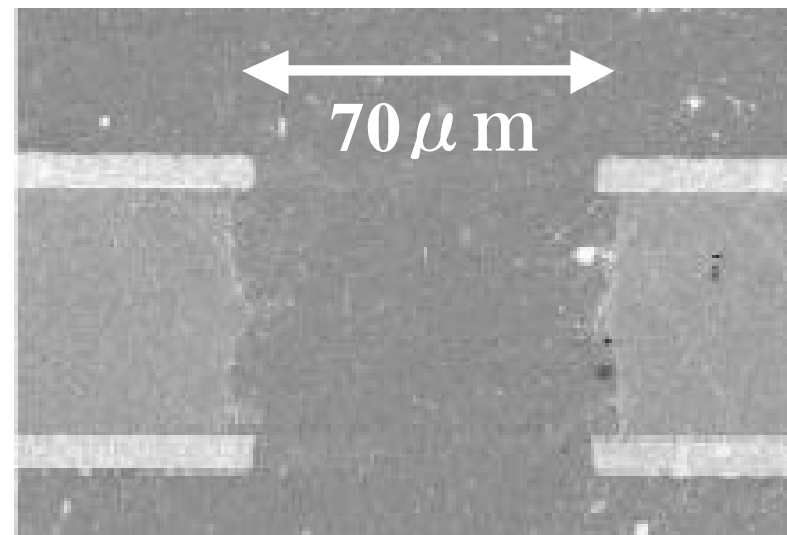


CERN GEM



etching

Fuchigami GEM



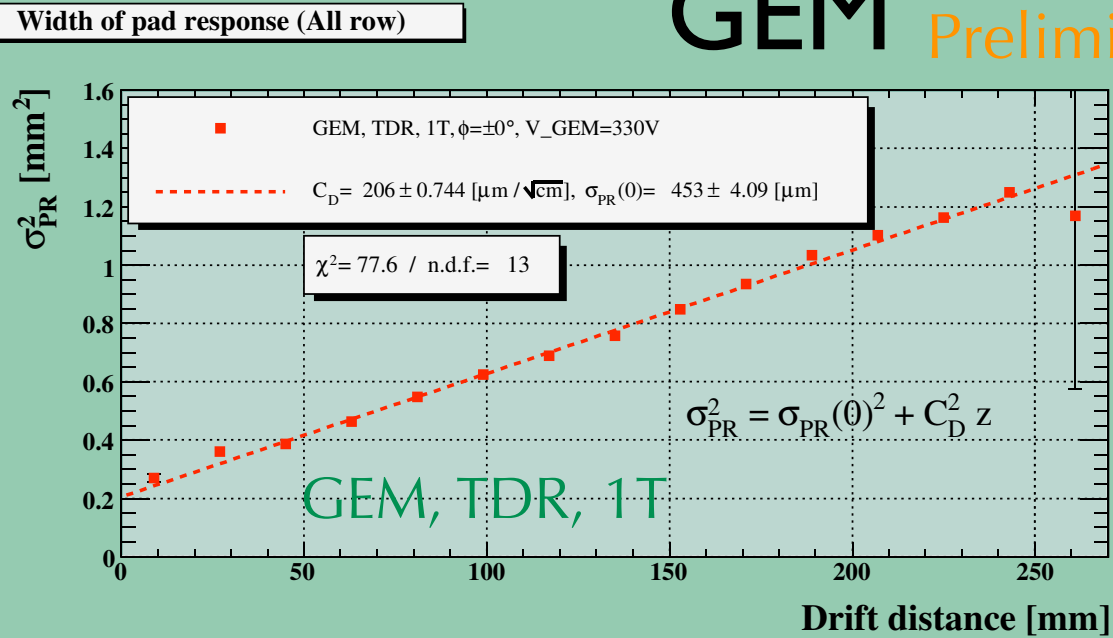
laser

Asian **past** Contributions

- MPI-TPC+GEM / MiroMEGAS

Micromegas

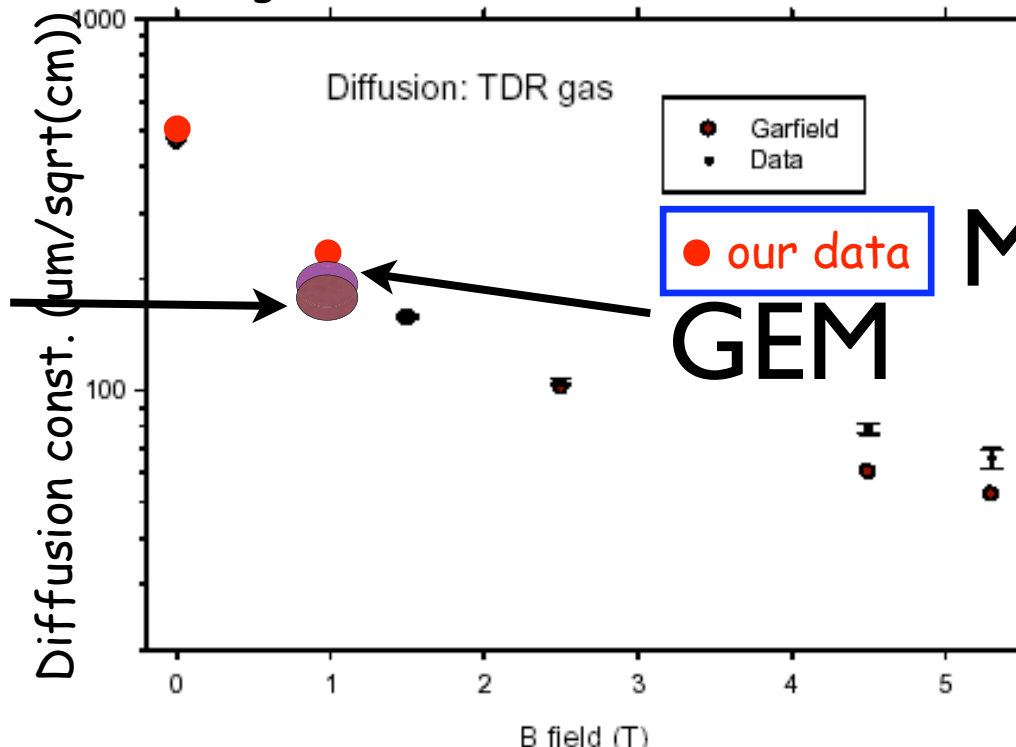
GEM Preliminary



Cd=206 nm

different Gas micromegas

TDR gas diffusion: D.Karlen @Paris



Cd=188 nm

MWPC-TPC

Results on TPC

- TPC basic understanding with GEM and micromegas
- with MPI-TPC as a small prototype
 - spatial resolution (150 μ m)
 - two track separation (2mm)
 - gas mixtures (P5, TDR,,)

We have learnt much in the work at KEK together with many people

Hope for EUDET on TPC

- Large TPC as a member of Worldwide LC-TPC
- again basic tests with large endplate
- readout channel density \leftrightarrow pad size
- optimized pad configuration
- dead space

VTX detector

- Fine Pixel CCD (FPCCD)
 - 24 μm , and 12 μm on hand from Hamamatsu
 - 5 - 9 μm pixel will be available in a year
 - hope to test under EUDET

Asian standing points on calorimeter

- ECAL (silicon /W) : CALICE
- ECAL (scintillator /W) : complementary
- HCAL (scintillator /Pb) : scintillator and wave-shifting fiber read out
- HCAL : need new type semiconductor photon sensor with GMode
- readout electronics

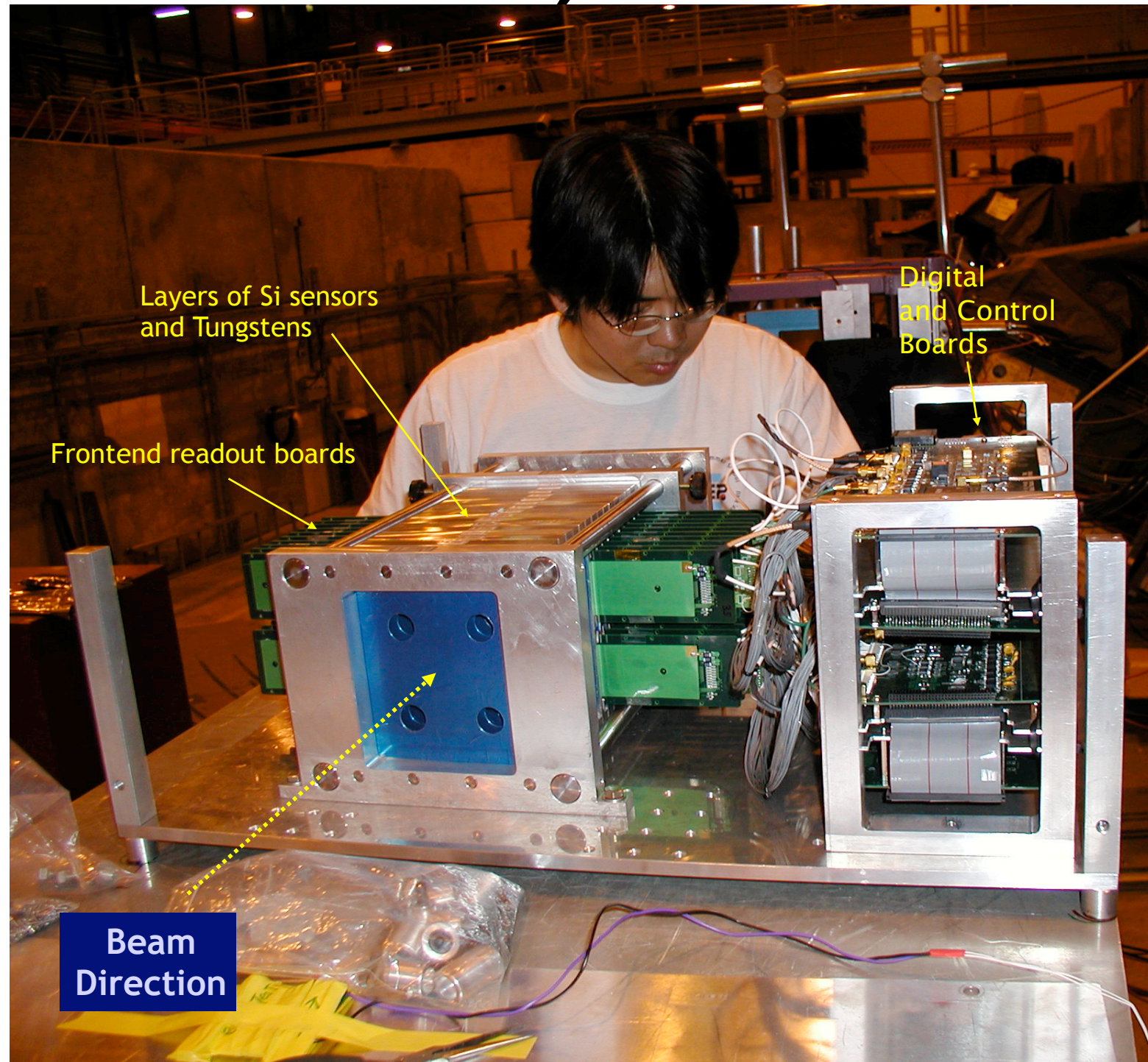
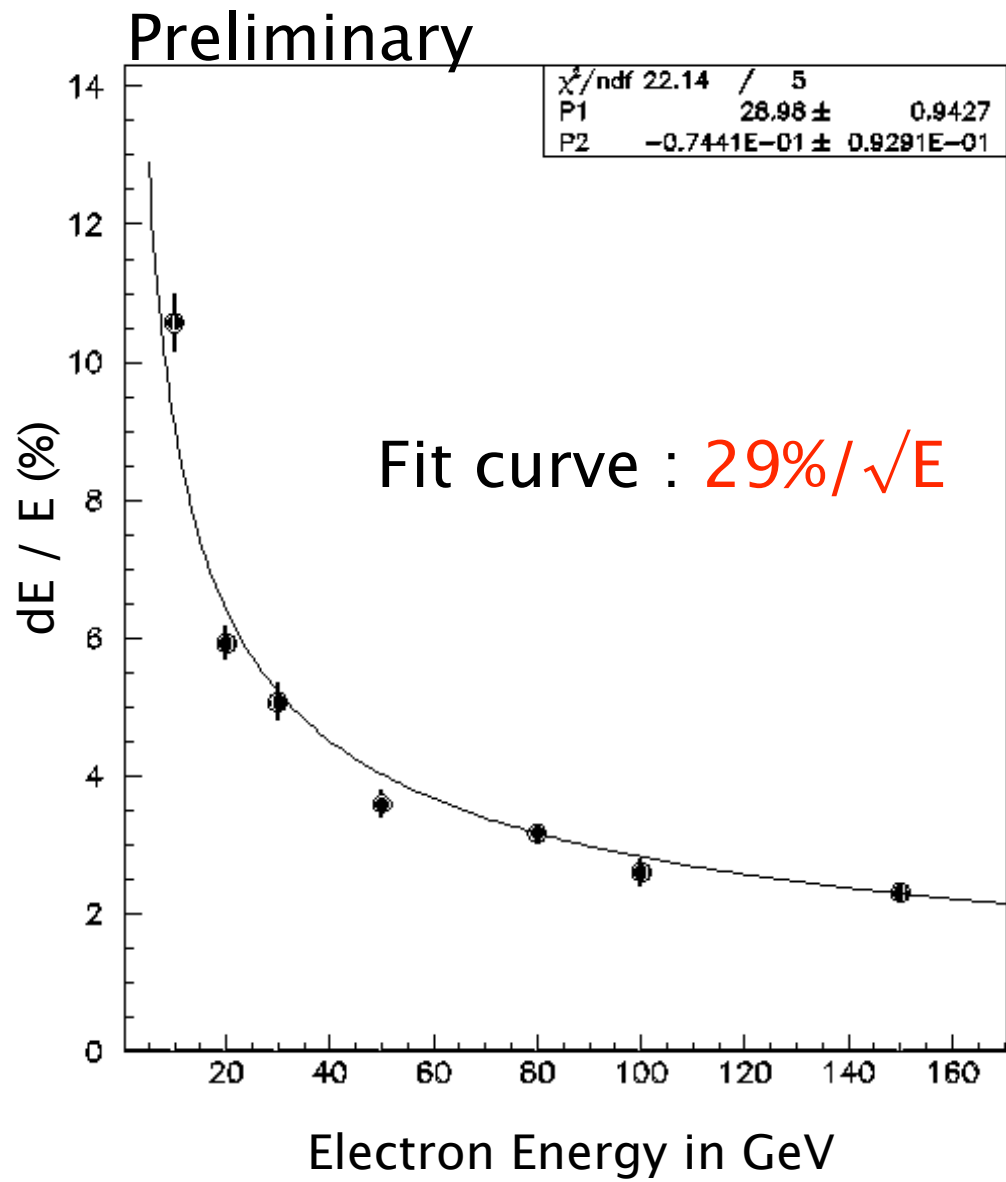
Asian Contributions

Calorimeters

- Beam test experiences
 - Beam test at CERN for Silicon +W
 - Beam test at DESY for strip scintillators
 - Beam test at KEK for ECAL (scintillator +Pb)
 - Beam test at Fermilab for HCAL (scintillator+Pb)
- Photon sensor development
- scintillator production

ECAL(Silicon+W) BT

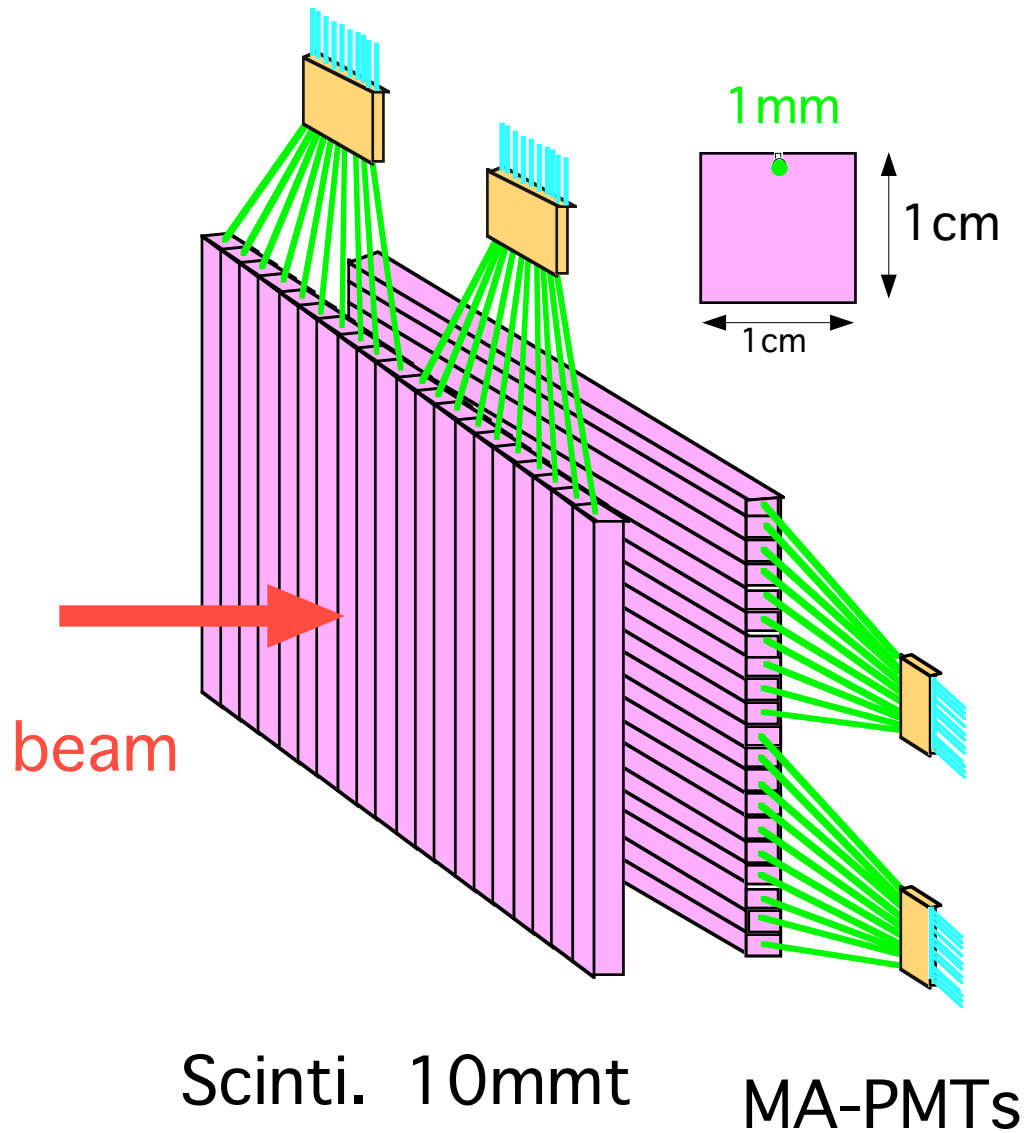
- Korean group



CERN-H2 2004

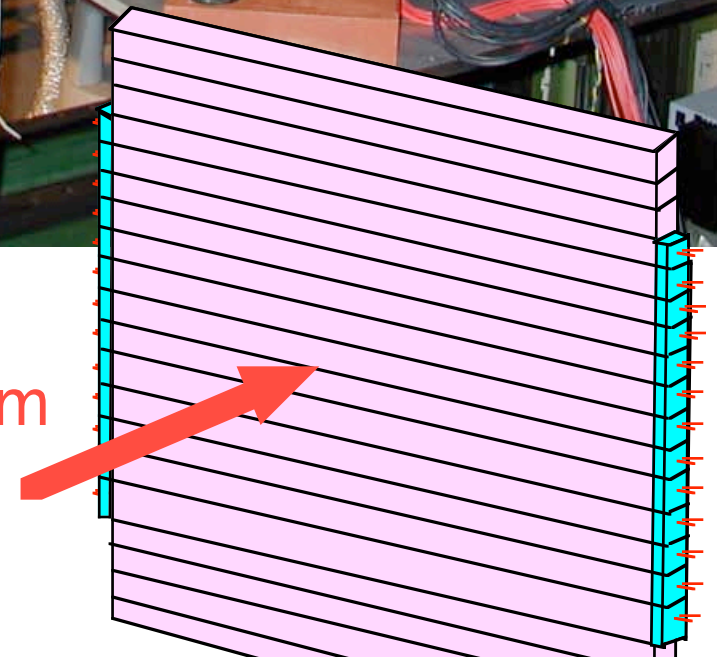
ECAL(scinti.-strip) DESY 2003

preshower



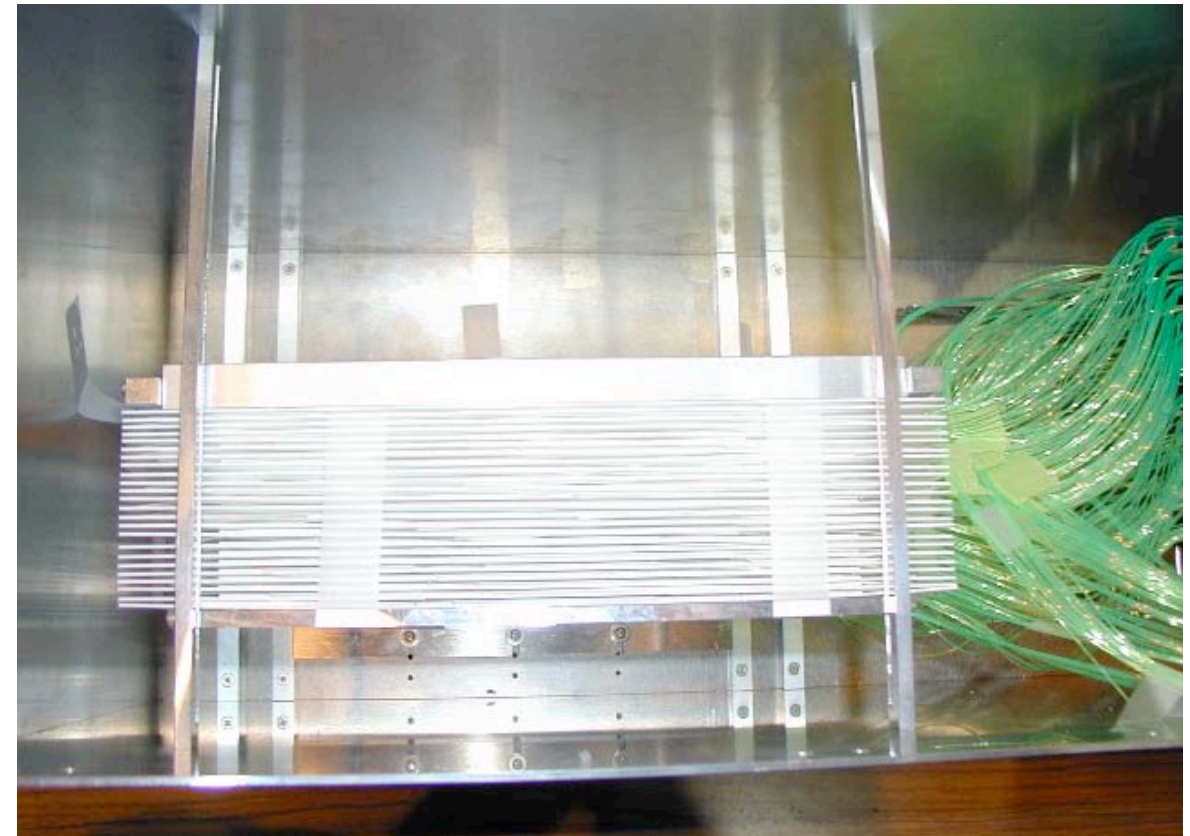
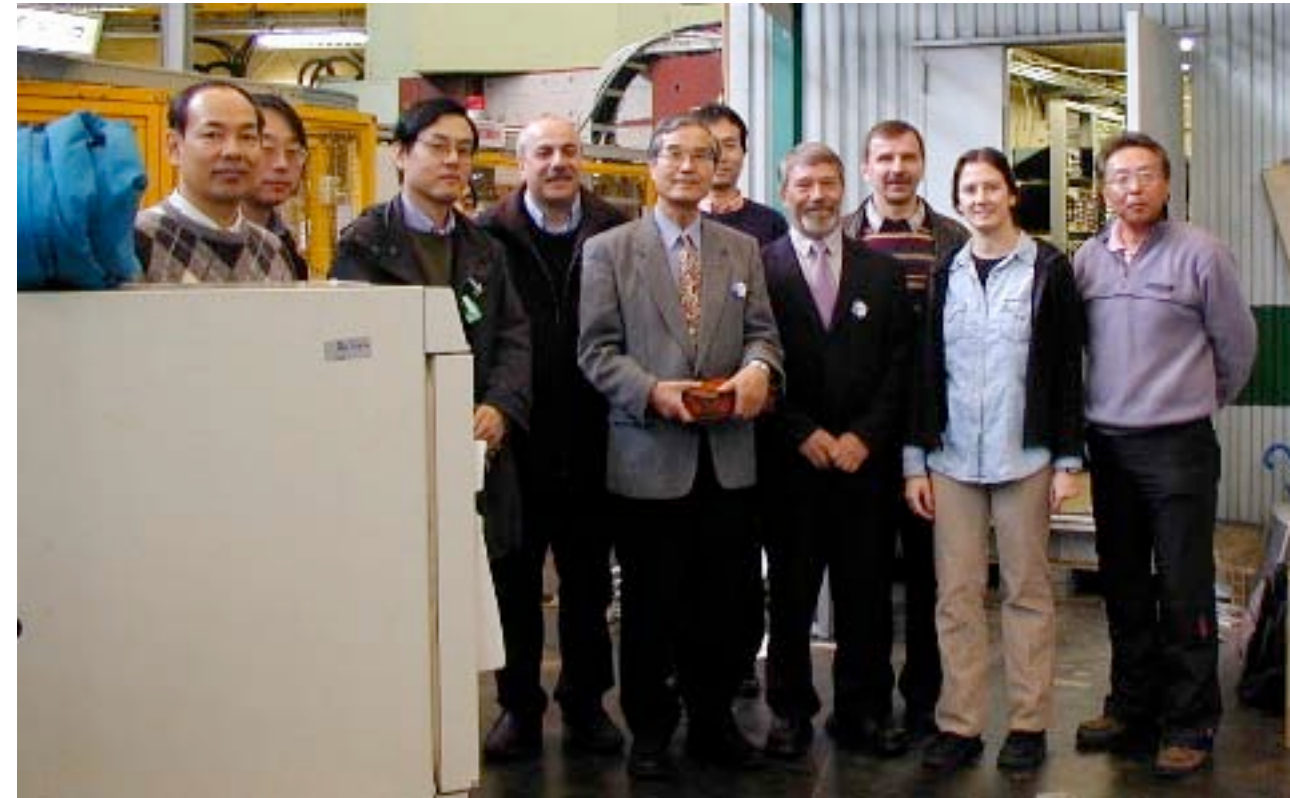
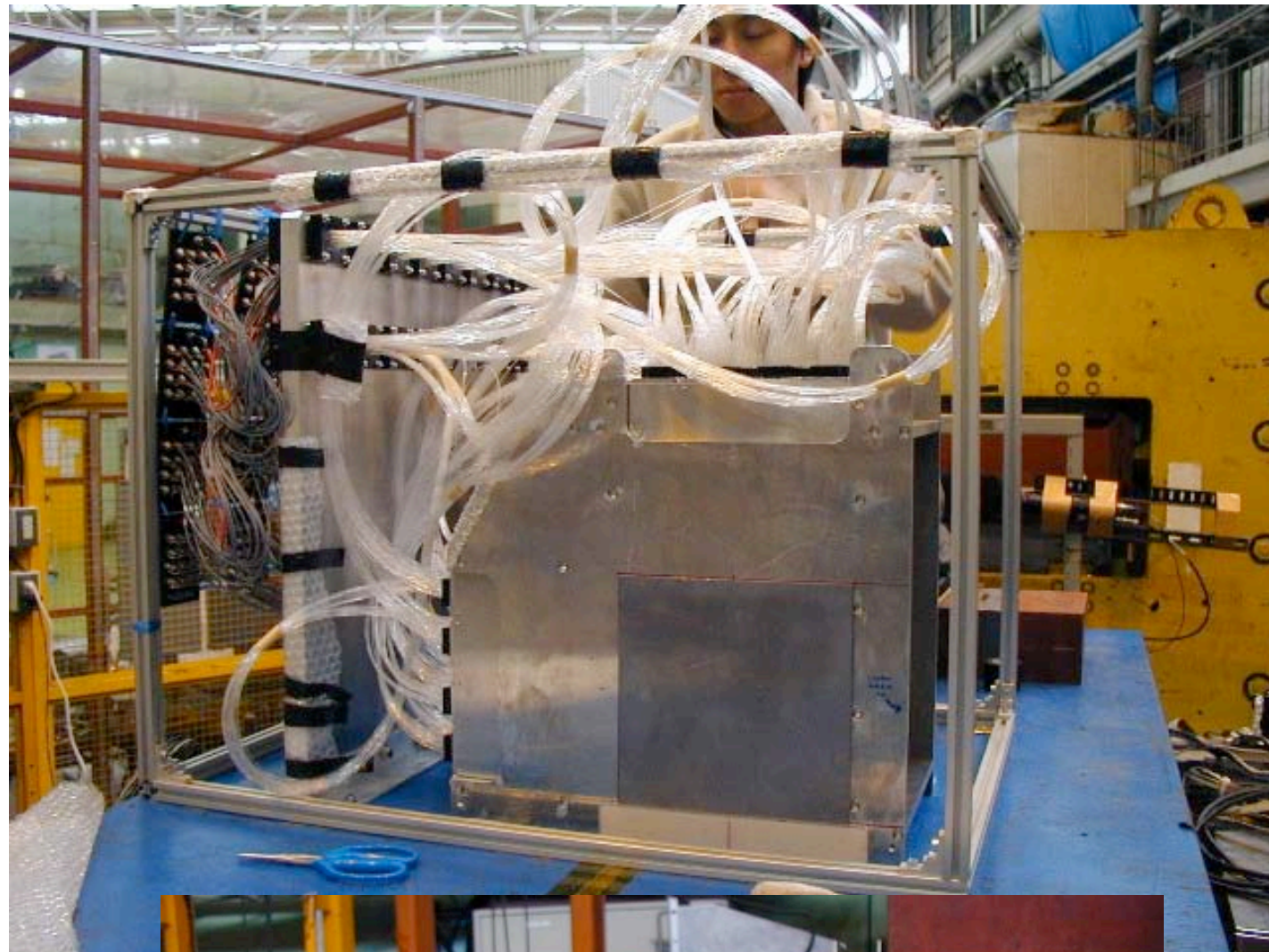
st. 21

beam



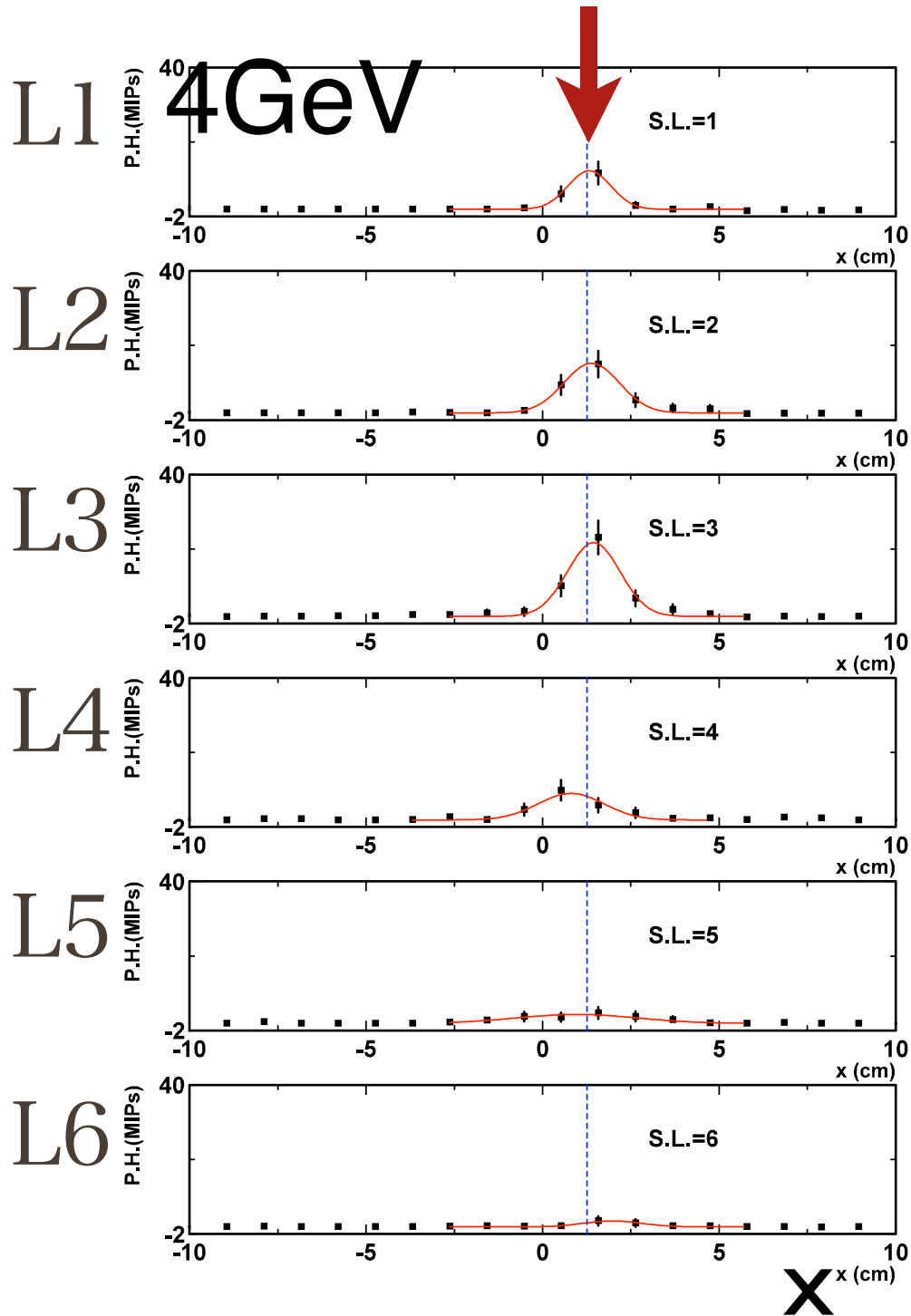
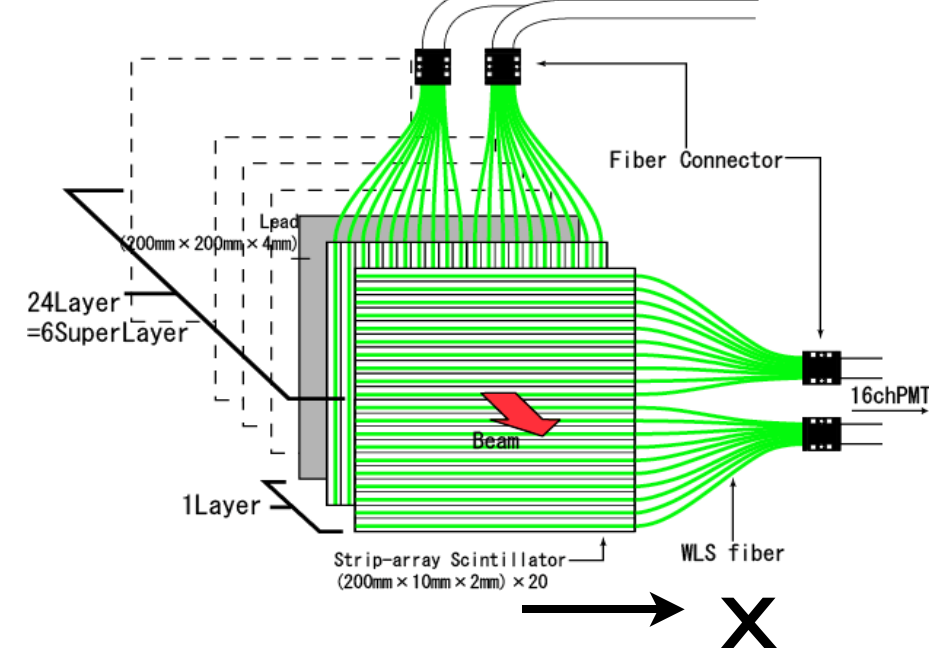
ECAL(scinti.+Pb) BT at KEK

2004

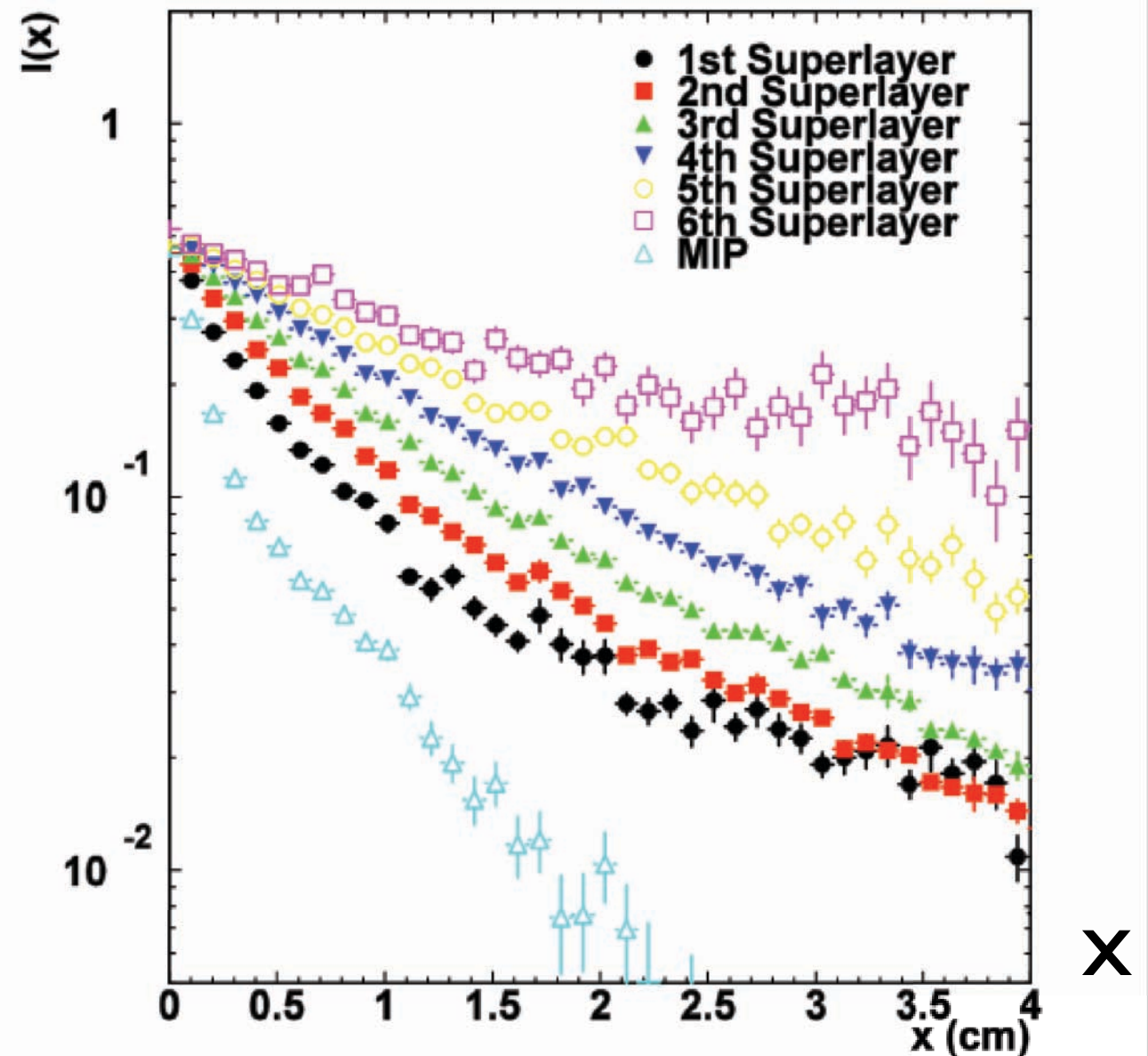


ECAL(scinti. strip)

an electron event in x direction



Integrated lateral shower profile

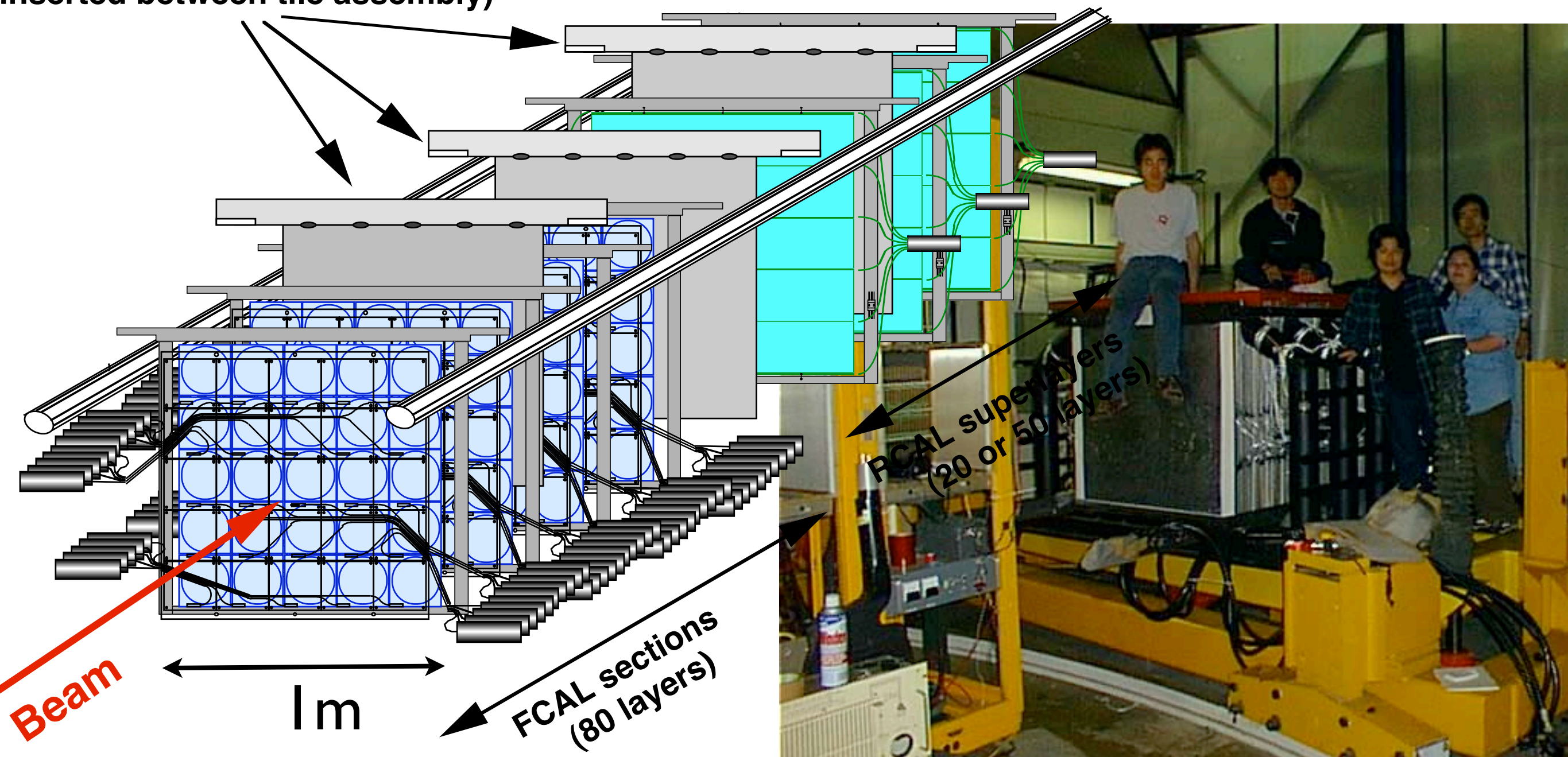


HCAL (scinti.+Pb) at Fermilab

1 m³

1999

Lead Plates
inserted between tile assembly)



Photon sensor development

with Hamamatsu Photonics

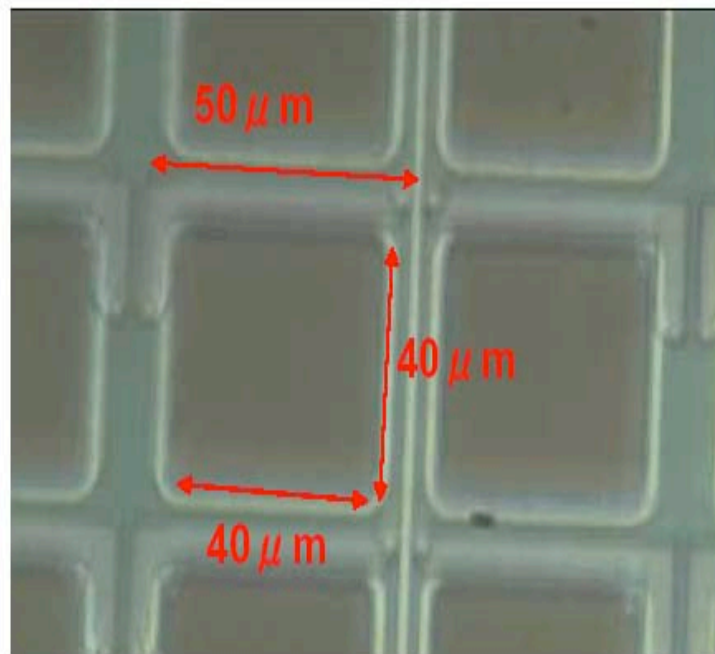
Semiconductor pixel photon sensor ~ SiPM for Tile-HCAL

v3: increase window size & PDE

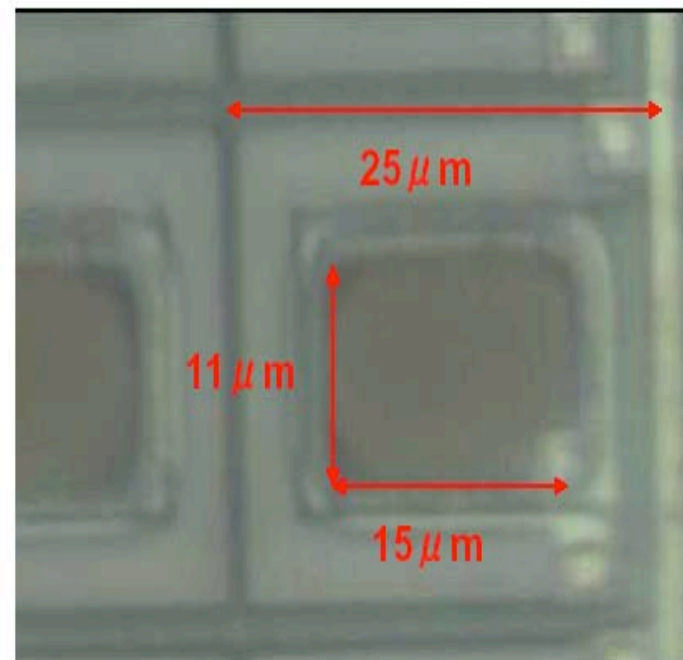
v3: better PDE
and map in a pixel

42%v2 to 64%v3 for 400pix

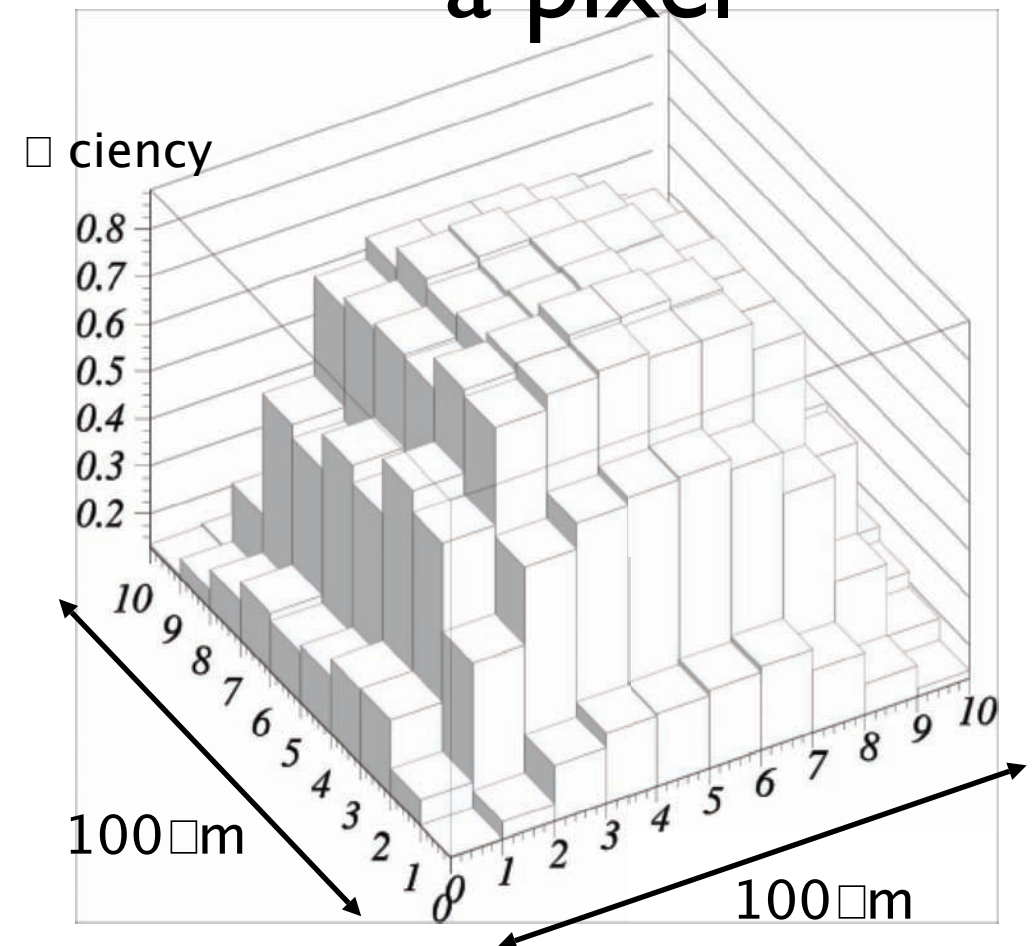
a pixel



400pixel



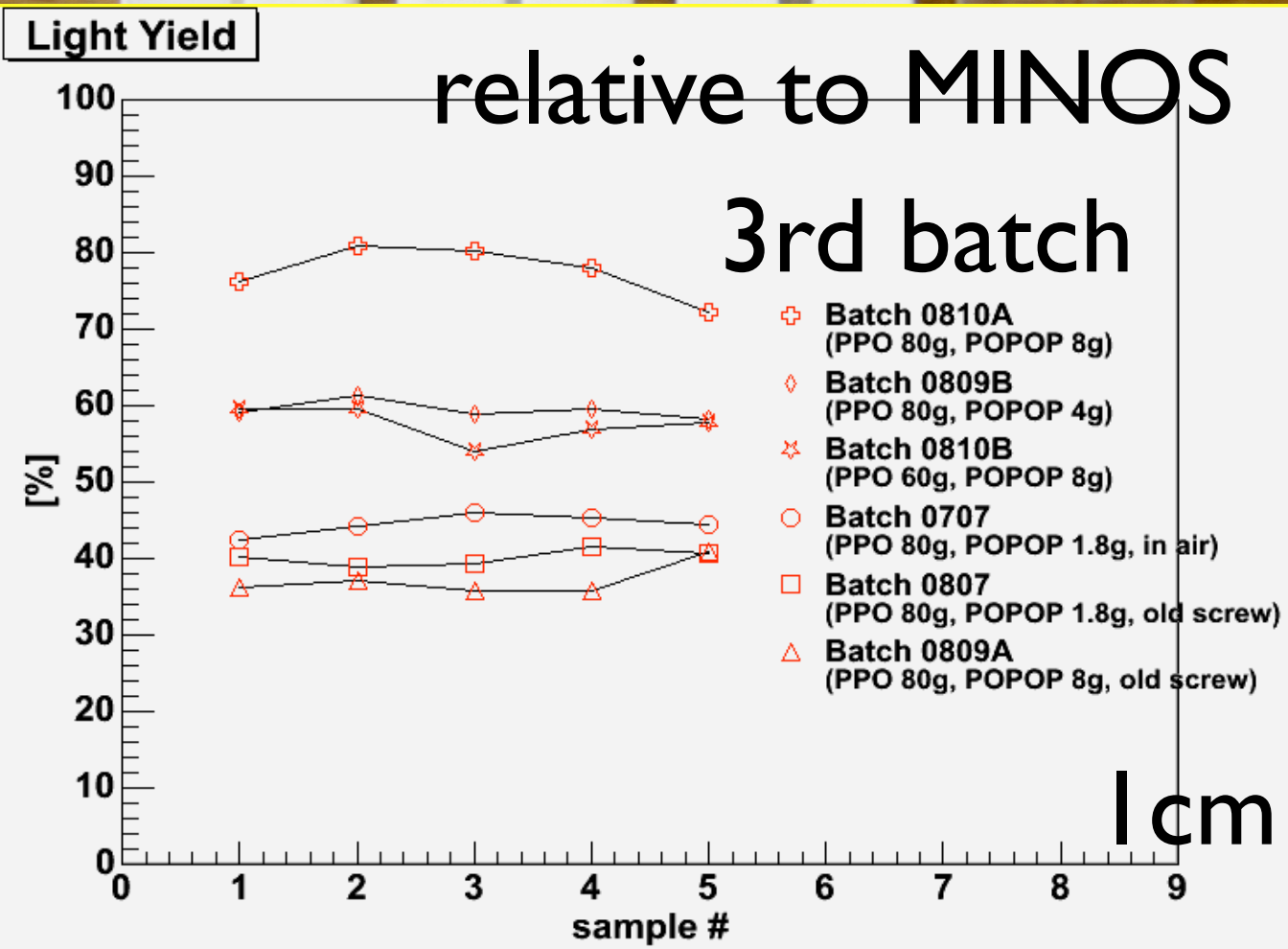
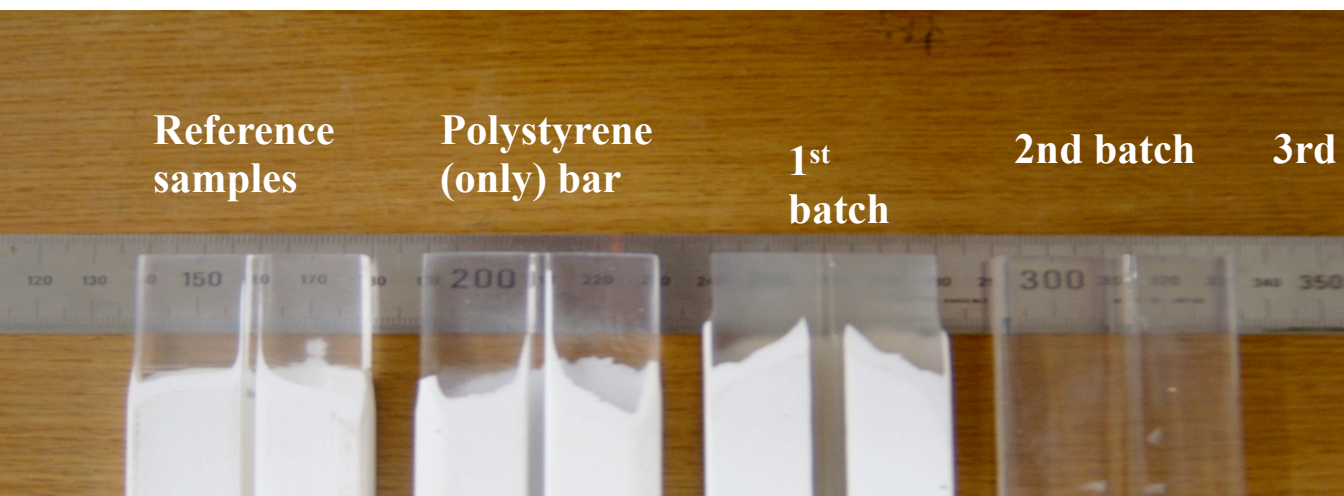
1600pixel



scintillator production

other than NICADD/NIU in Fermilab

- Kyongpook Univ. (Korea)



extrusion method
challenging 3mm thick

1cm thick

Hope for EUDET on CAL

- establish beam test facility
- common read out electronics
- common simulation framework
- expertise will extend development of detector

Future plans and EUDET

- Asians will
 - TPC : clearly work together with EUDET
 - for the large prototype TPC
 - Calorimeter : make close communication and may be users of test beams
 - BT end of 2006 at DESY
 - BT 2007 or 2008 at CERN/Fermilab

Summary



- past co-working and collaboration were fruitful between European and Asian
- EURET is the natural continuation for those experience
- we, Asian hope the progress and success of EURET with our co-working