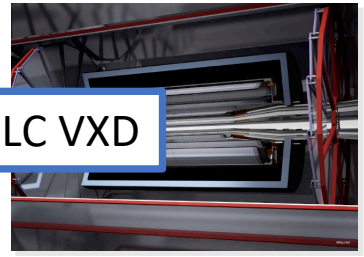
Picsel group at IPHC (Strasbourg)

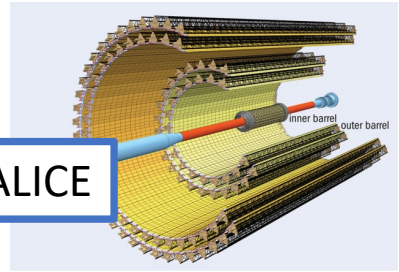
Physics with Integrated Cmos Sensors and ELectron machines

PICSEL TEAM

Also in CMS



Also in ILC VXD



Also in ALICE

Jeremy Andrea

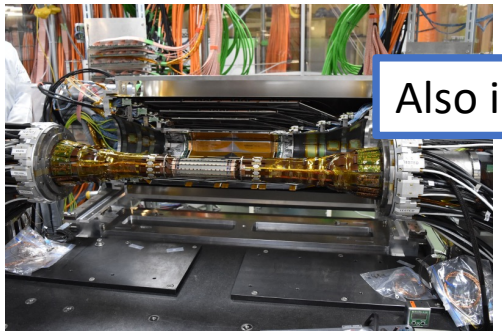
Jérôme Baudot

Auguste Besson

Ziad ElBitar

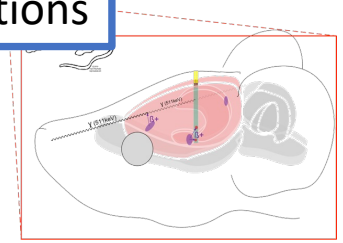
Serhiy Senyukov

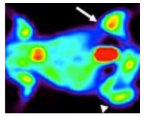
+ tenure track
Early 2026



Also in BELLE2

Also Applications



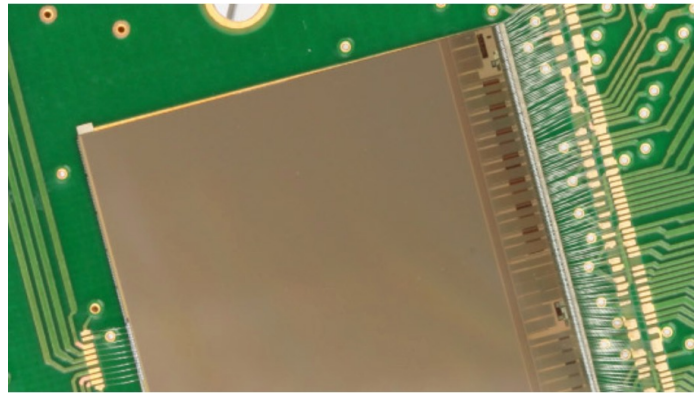


Image

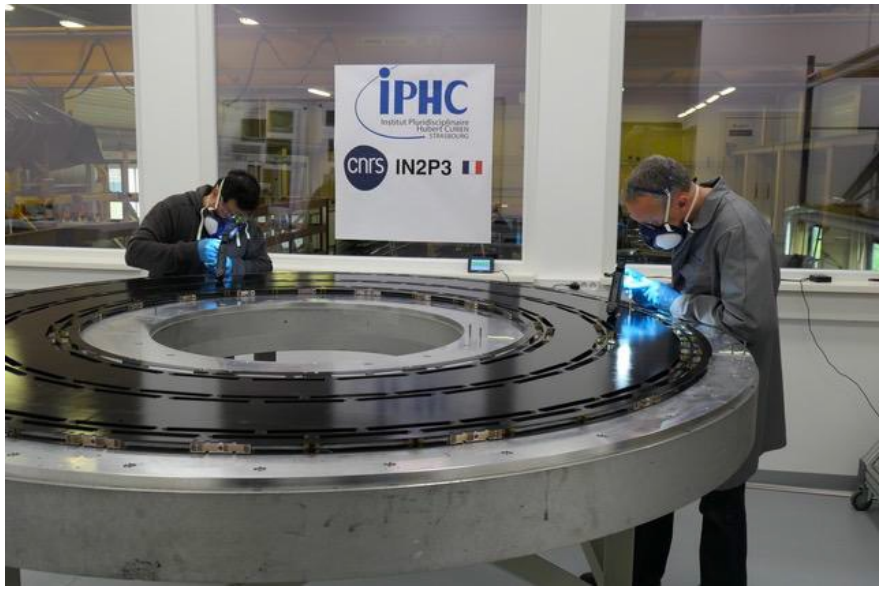
Plan to contribute to FCCee vertex detector

C4PI platform

- Centre of Expertise for CMOS Sensors with Integrated Pixels. Long standing expertise in MAPS technology : from chips designs (sensor, signal treatment, etc..) to DAQ, integration and testing.



- Composed of three teams, C4PI can cover many of (all?) of the ingredients of MAPS R&D for physics detectors :
  - 12 engineers on chips design,
  - 6 engineers on chips testing and validation of prototypes,
  - 3 engineers and technicians on micro-technique and integration (clean rooms).



- Mechanical team for design, prototyping and constructions (~10 members).
  - Design of small and large mechanical structures for nuclear and high energy physics,
  - Familiar with design and prototyping of Carbon Fibres structures and related assemblies,
  - Manufacturing capacities : machining (steal, Al, Ti alloys), additive fabrication (plastic, potentially enriched in carbon fibres, PEEK), moulding.

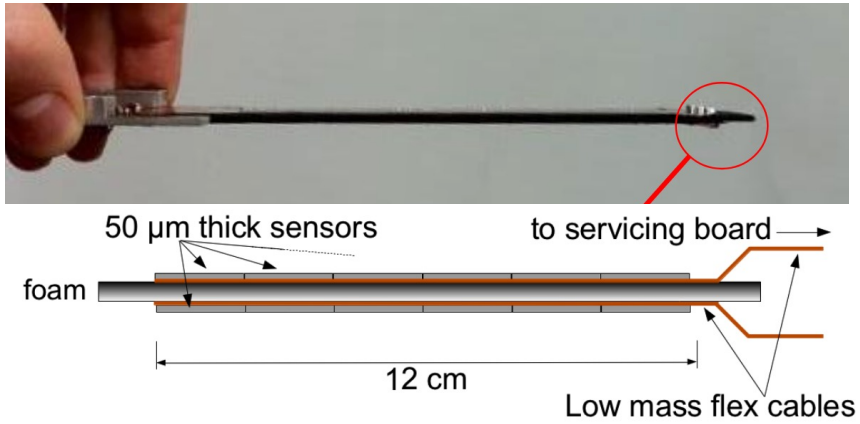
In house beam test facility : see presentation tomorrow

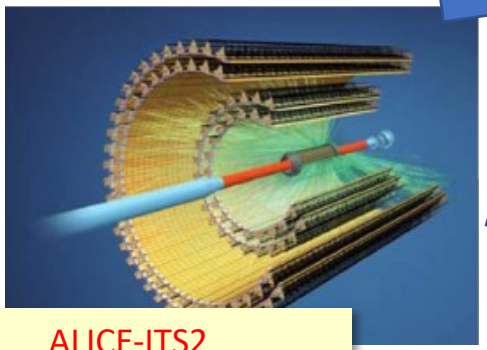
Summary of past contributions

EUDET beam telescope
(Mimosa 26 by IPHC)
~ 15 copies since 2009

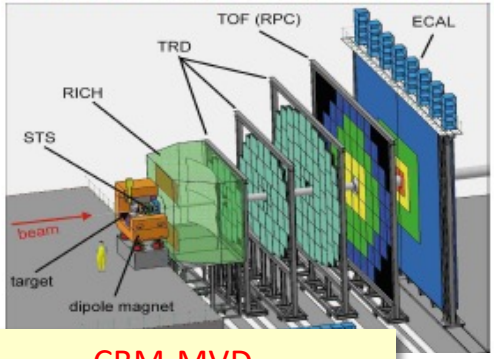
STAR-PXL detector
(ULTIMATE by IPHC)
2014-16

Plume in Beast (Belle2)

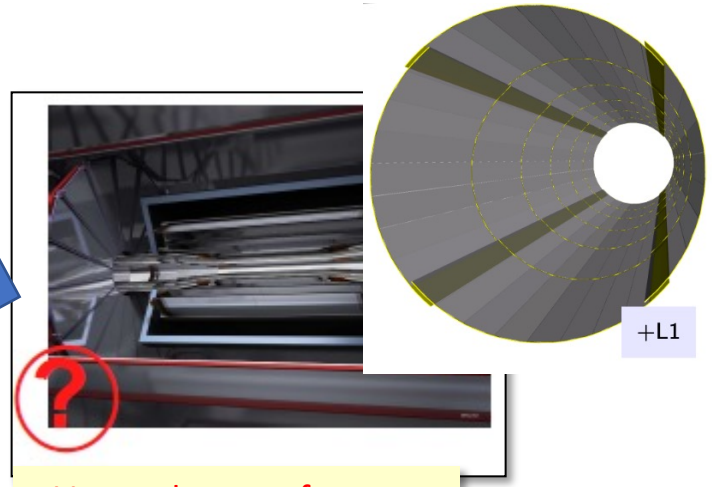




ALICE-ITS2
(ALPIDE by CERN & IPHC)
ALICE-ITS3 in construction



CBM-MVD
(MIMOSIS by IPHC & IKF)
Under development



Vertex detector for e+e- colliders

Programm for FCCee Vertex detector

- Two main axis of contributions for IPHC to FCCee vertex detectors:
  - Octopus : asynchronous readout (pixel grouping) chip designs. Contribution to DRD3. *See Seryi's talk.*
  - Mechanical and integration design of a vertex detector for FCCee. DRD8. *See Jeremy's talk.*

Expression Of Interest for a Vertex Detector at FCCee :

FCC Snail-shape vErtEx Detector (FCC-SEED)

Involved laboratories : IPHC[1], CPPM[2], IP2I[3], LPNHE[4], APC[5], LAPP[6],
Laboratory contact persons: Marlon Barbero[2], Auguste Besson[1], Marco Bomben [5], Gaëlle Boudoul [3], Giovanni Calderini [4], Jessica Levêque[6],
Additional editors: Jérôme Baudot[1], Ziad El Bitar[1], Didier Contardo[3], Fares Djama[2], Elisabeth Petit[2], Serhy Senyukov[1] and
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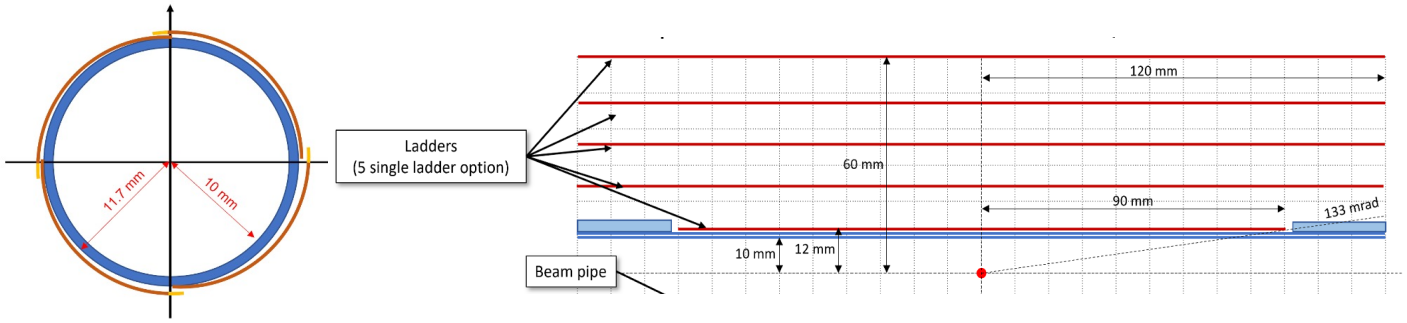
[4]Laboratoire de Physique Nucléaire et de Hautes Énergies UMR 7585, France
[5]laboratoire AstroParticule et Cosmologie, France
[6]Laboratoire d'Annecy de Physique des Particules, France



FCC-SEED
VERTEX DETECTOR
FOR FCC-ee

Contributions of IP2I to the Full Simulation of the vertex detector response.
See Jessy's talk