



Workshop on Tracking Detectors in High Energy Physics

(25 - 27 May 2015)

Organized by

National Centre for Physics, Islamabad

The high energy particle detectors play a key role in exploration of the standard model physics and beyond. In order to explore physics at the TeV scale, sophisticated detectors are required to measure particle's position, momentum and energy precisely. Compact Muon Solenoid (CMS) is one of the general purpose detectors at the Large Hadron Collider (LHC). As a result of high energy collisions, the enormous amount of particle flux ($\sim 10^{34} \text{ cm}^{-2}\text{s}^{-1}$) is produced in the inner-most part of the CMS detector. Therefore, the silicon tracker is ideal to use as an inner detector due to its high resolution and precision measurement. The High Luminosity LHC (HL-LHC), a luminosity upgrade of the LHC in the year 2023, is planned to reach its ultimate luminosity goal of $5 \times 10^{35} \text{ cm}^{-2}\text{s}^{-1}$. At such a high luminosity, the CMS detector requires a major upgrade also in its inner-tracking system. The Experimental High Energy Physics group at NCP is also contributing in the CMS tracker 2023 upgrade. Along with the R&D efforts, the group is also interested for a laboratory setup to assemble tracker modules.

Purpose

The aim of the activity is to provide a platform to the people working in the field of semiconductor detectors to collaborate with each other by sharing their knowledge and experience. It will also provide an opportunity to students to understand the basic principles and applications of silicon tracking detectors in high energy physics and related topics. The workshop is also useful for the researchers working in other tracking detectors such as Resistive Plate Chambers (RPCs) and Gas Electron Multiplier (GEM). The international and local speakers from CERN and different universities/Institutes of Pakistan will present their work related to the subject in focus.

Topics

During the workshop, we plan to cover the following topics:

- CMS Tracker Detector
- Semiconductor Detectors: Principles and its Applications
- Physics of Diamond Detectors
- Physics of Silicon Detectors
- The CMS pixel detector and its performance
- The CMS strip detector and its performance
- The ATLAS tracker and its performance
- Phase-2 upgrade of CMS tracker
- Resistive Plate Chambers (RPC)
- Gas Electron Multiplier Detectors (GEM)

Format

The workshop covers some basic introductory lectures on Silicon detectors as well as plenary lectures about the CMS/ATLAS/ALICE semiconductor trackers and its upgrade. Detailed information can be found on the activity website:

<http://www.ncp.edu.pk/wtdhep-2015.php>

Participation

Students of M.Sc, MS, M.Phil, Ph.D and Scientist of Academic and R&D organizations who are working or intend to work in the field of particle detectors can apply. Selection will be made by the technical committee and the list of accepted participants will be posted on NCP website on May 15, 2015. **There is no registration fee.**

How to apply

Online application form is accessible using link: <http://www.ncp.edu.pk:8080/TDHEP-15>

Submit online application form not later than **May 10, 2015.**

Activity Secretariat:

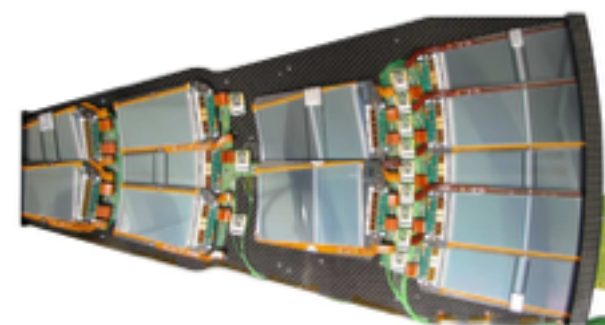
email: caad@ncp.edu.pk phone: 0512077363, 0512077350

email: ehp.tracking.2015@ncp.edu.pk phone: 0512077337

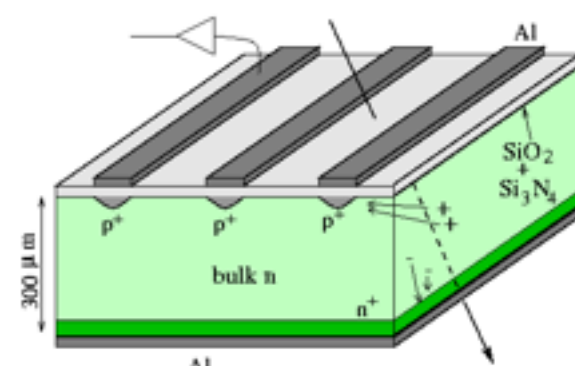
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CMS Tracker Detector



Silicon Tracker Module



Working Principle of Silicon Detector

DIRECTORS

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ORGANIZING COMMITTEE

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KEY SPEAKERS

Dmitri Tsybychev (Stony Brook, USA)
Moritz Guthoff (CERN)
Georg Auzinger (CERN)
Viktor Veszpremi (MTA, Hungary)
Tomas Hreus (Zurich, Switzerland)
Hafeez R. Hoorani (NCP)
Ashfaq Ahmad (NCP)
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APPLICATION DEADLINE

May 10, 2015