

Towards a 10us, thin high resolution pixelated CMOS sensor system for future vertex detectors

Wednesday 17 February 2010 15:15 (25 minutes)

The physics goals of many present and future high energy experiments require a precise determination of decay vertices, imposing severe constraints to vertex detectors (readout speed, granularity, material budget, ...). The IPHC-IRFU collaboration developed a sensor architecture to comply with these requirements. The first full scale CMOS sensor was realized and equips the reference planes of the EUDET beam telescope. Its architecture is being adapted to the needs of the STAR (RHIC) and CBM (FAIR) experiments. It is a promising candidate for the ILC experiments and the ALICE detector upgrade (LHC). A substantial improvement to the performances of CMOS sensors, especially in terms of radiation hardness, should come from a new fabrication technology with depleted sensitive volume. A prototype sensor was fabricated to explore the benefits of the technology. The talk will present the first test results of these innovative sensors and discuss their evolution towards future vertex detectors. Finally the issue of system integration will be addressed. In 2009 the PLUME collaboration was established to investigate the feasibility and performances of a light double sided ladder equipped with CMOS sensors, aimed for the ILC vertex detector but also interesting for the CBM application. The talk will show the present achievements of the project and its next milestones, highlighting the perspective of a 10us read-out time by combining different pixel geometries on either face of a ladder.

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

http://www.iphc.cnrs.fr/IMG/demasi_abstract.pdf

Author: DE MASI, Rita (IPHC-Strasbourg)

Presenter: DE MASI, Rita (IPHC-Strasbourg)

Session Classification: Semiconductor Detectors 3