Contribution ID: **84** Type: **not specified**

Testbeam characterisation of the silicon-strip modules in ATLAS Inner tracker (ITk) for High Luminosity phase of the Large Hadron Collider (HL-LHC)

The Large Hadron Collider (LHC) is planning to be upgraded to the High-Luminosity LHC (HL-LHC). The protons in HL-LHC will collide with each other at an energy up to 14 TeV. And the number of collisions will be increased by a factor of between 5 and 7.5 with respect to the nominal LHC design. The HL-LHC will make it possible to study the fundamental building blocks of matter and the forces binding them in more detail.

The ATLAS experiment is one of the main experiments at the LHC. The Inner Tracker (ITk) is the inner-most part of the ATLAS detector for HL-LHC. The ITk is a full-silicon tracker which is designed to cope with the increasingly high data readout requirement and the harsh radiation environment in HL-LHC.

As a major contributor to the ITk project, DESY carries out a large range of ITK development activities such as module production, system integration and hosting testbeams for testing ITk modules. Testbeam uses high energy particle beam to probe and characterise the performance and radiation hardness of the prototype modules.

The summer student will engage in testbeam activities for the ITk silicon strip modules. This summer student project will cover both hands-on session about the testbeam setup and testbeam data analysis using software tools. The hands-on session will give an overview on hardware in testbeam, for example, data acquisition system, trigger logic unit etc. The data analysis part will allow the student to understand how the track reconstruction software works and how module performance is evaluated using threshold, noise level, particle detection efficiency etc.

Group

FH-ATLAS

Project Category

B2. Development of experimental equipment (hardware-oriented)

Special Qualifications

Particle detectors, ROOT or C++

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