Contribution ID: **10** Type: **not specified**

Test Beam Data Analysis and Calibration of APTS Prototypes Developed in 65 nm CMOS Imaging Technology

Vertex detectors play a crucial role in tracking systems for high-energy physics experiments, primarily relying on silicon pixel sensors to identify charged particles. The latest advancements in Monolithic Active Pixel Sensors (MAPS), developed using a 65 nm CMOS imaging process, enable higher circuit densities, allowing for smaller pixel sizes and more complex integrated electronics. These sensors provide a cost-effective, lightweight solution with low power consumption, making them well-suited for future lepton colliders.

Within the Tangerine project, several MAPS prototypes in 65 nm CMOS technology are being studied. Among these is the Analog Pixel Test Structure (APTS), a test structure developed at CERN within the context of the ALICE Inner Tracking System upgrade (ITS3). Prototypes with different pitches and sensor layouts are under investigation at DESY, and several test-beam and laboratory measurement campaigns have been conducted on the samples in recent months.

The student will be involved in the analysis of test-beam data and the charge calibration in the laboratory of some APTS prototypes. The results of these measurements will contribute to the understanding of the sensor performance and will be used to validate simulations carried out within the research group.

Group

FH-ATLAS

Project Category

B2. Development of experimental equipment (hardware-oriented)

Special Qualifications

Prior experience with hardware, lab data analysis, Python or C++, and Unix shell is welcome but not required. Interest in laboratory work and/or test beam data analysis is required.

DESY Site

Hamburg

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