Contribution ID: **14** Type: **not specified**

Monte Carlo Simulations of monolithic CMOS sensors with Allpix Squared

Monolithic CMOS sensors enable the development of detectors with low material budget and a low fabrication cost. Besides, using a small collection electrode results in a small sensor capacitance, a low analogue power consumption, and a large signal-to-noise ratio. TCAD Device simulations are used to model the highly non-linear electric field inside this type of sensor. These electric fields can be imported into the Allpix Squared framework, which simulates the full response of the sensor under particle interaction, accounting for the effects like Landau fluctuations in the energy deposition stage, formation of delta-electrons, and propagation of charges via drift and diffusion. Thus, the combination of TCAD and Allpix Squared allows for precise and high-statistics simulations needed for sensor characterization.

`The summer student will join the Tangerine team and work on Monte Carlo simulations of the H2M chip (hybr`

Field

B3: Development of experimental particle physics equipment (hardware-oriented)

DESY Place

Hamburg

DESY Division

FH

DESY Group

ATLAS

Special Qualifications:

Prerequisites: Basics in Linux, ROOT, Unix shell
Nice to have: simulation/silicon experience, Geant4 basics

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