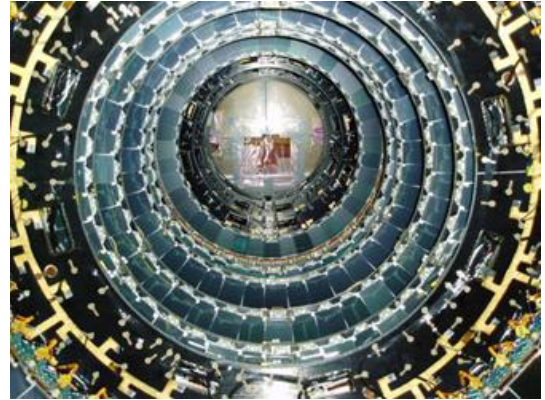


Diploma- and PhD thesis within the ATLAS-Inner detector project at the Max-Planck-Institut für Physik (MPP)

Starting in fall 2008 the Large Hadron Collider (LHC) at CERN in Geneva will investigate a fundamental question of particle physics - the mechanism of the electroweak symmetry breaking, i.e. the question how the fundamental particles get their masses. Other important measurements within the Standard Model, our theory to describe the fundamental interactions of elementary particles, are the precise determinations of the masses of Top-Quarks and W-Bosons. The MPP participates in this research within the ATLAS Collaboration.

In our group we have built about 20% of all Endcap modules of the Semiconductor Tracker (SCT), one of the tracking devices of ATLAS. The silicon sensors, as well as the carrier structure used for these modules, have been designed at the MPP. The main focus of our work is the calibration of the two silicon detectors (SCT- and Pixel detector) and the preparation of the physics analyses of the LHC collision data. Especially, we are concerned with the alignment of the inner detector using tracks from charged particles (based on Monte Carlo events, cosmic rays, test beam data, and soon also on real data from LHC collisions), and with the preparation of the measurements of the mass of the Top-Quark and the Top-Antitop production cross-section. Looking further ahead, we are developing a new concept for a radiation tolerant pixel detector which could be used at the Super LHC. This hardware project is performed in collaboration with the semiconductor laboratory of the Max-Planck-Society and other national as well as international partners.



View into an SCT-Endcap.

We are seeking candidates for diploma- and PhD thesis who participate in the commissioning of the SCT detector at CERN, in the software development for calibration as well as physics analyses, or in the hardware project. Within this work longer stays at CERN are possible.

We offer

- The possibility to work on fascinating questions of experimental particle physics in an international collaboration.
- Hands on experience in novel semiconductor technology.
- Operation of modern particle detectors with fast electronics.
- Software development in C++.

We expect

- Highly motivated candidates with deep interest in physics who would like to face the challenges of a modern high energy experiment.
- Experimental skills and the willingness to participate in the work at the MPP and at CERN.

For additional information please contact us.

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