SCT Status Report

The ID Barrel on its way

Munich September 18, 2006

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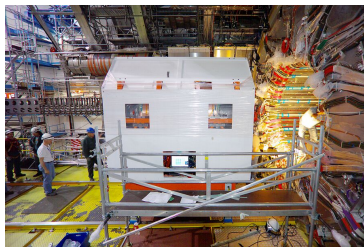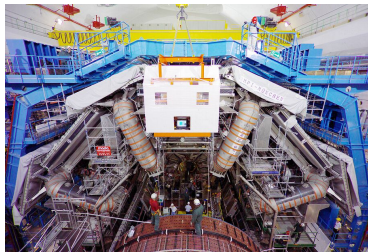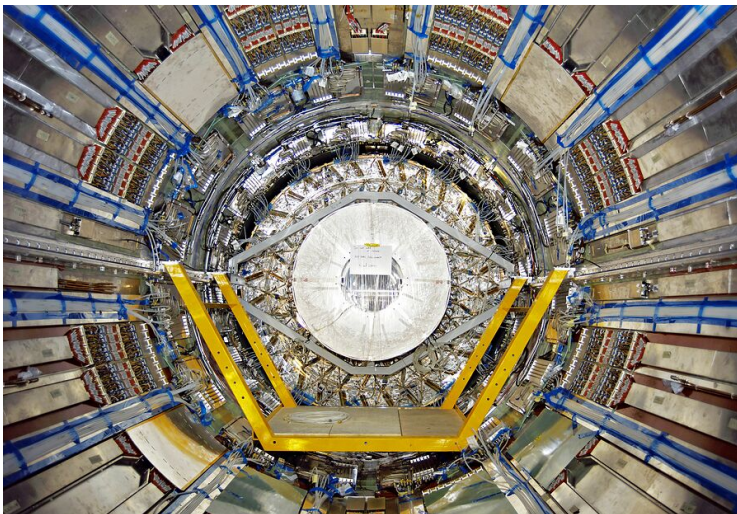nisius@mppmu.mpg.de

ID Barrel Installation - From the SR1 building to the access shaft

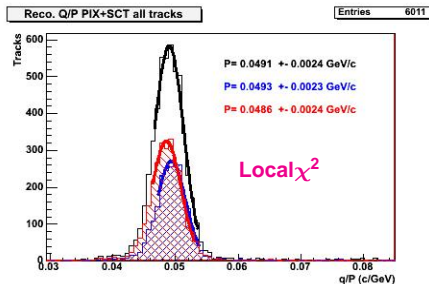# ID Barrel Installation - From the shaft to the final position within ATLAS
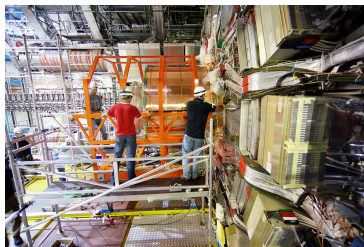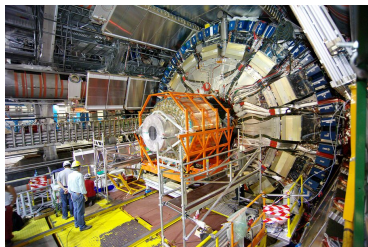
The ID Barrel within ATLAS

The SCT barrel was installed within ATLAS on August 23+24, 2006.

Inner Detector Silicon Alignment Software - CTB Alignment

Simul: $Q/p = 0.0499 \pm 0.0020$ GeV/c
       for $p = 20$ GeV/c pions

— **Several algorithms are able to align the CTB setup. Our approach is the only one that does not fix weakly constrained degrees of freedom, but aligns all six DoFs.**

— **A momentum resolution comparable to the default geometry simulation can be achieved.**

— **A combined note on the performance of the alignment algorithms is in preparation.**

The CTB alignment is in good shape.
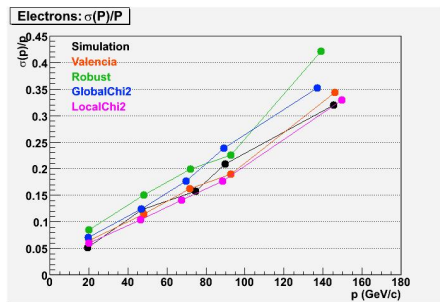
Inner Detector Silicon Alignment Software - Additional work

In House Activities

— **The Kalman filter approach is implemented in ATHENA by Manuel Kayl.**
— **The impact of vertex constraints are being investigated for $Z \rightarrow \mu\mu$ events by Sophio Pataraia.**
— **The impact of global detector movements on overlap residuals is under study by Kathrin Störig.**

Software usage by other groups

— **The Bergen group used our alignment software to align the SR1 Cosmic Setup.**
— **The Berkeley group used our alignment software to align global structures (e.g barrel layers) in Monte Carlo events.**

The alignment software is an area of continous progress.

Conclusions and Outlook

Hardware

— **The Inner Detector barrel was installed within ATLAS on August 23+24, 2006.**
— **The endcaps are being integrated with the TRT at the moment.**
— **For the SLHC pixel detector the next steps towards the 3D integration concept have been agreed in discussions with the IZM.**

Alignment Software

— **We extended our alignment studies to the Combined TestBeam data.**
— **Other groups also successfully used our alignment software to align the SR1 Cosmic setup, as well as global structures in Monte Carlo events.**
— **An LHC alignment Workshop was held at CERN, September 4–6, 2006.**

Physics Analyses

— **Tobias Göttfert continues in our group as IMPRS PhD student.**
— **At the moment, we are contributing to three top CSC notes, namely the ones on the top mass, the $t\bar{t}$-cross-section and the trigger in semileptonic $t\bar{t}$ events.**

> **The SCT group at MPI is very active and still growing.**