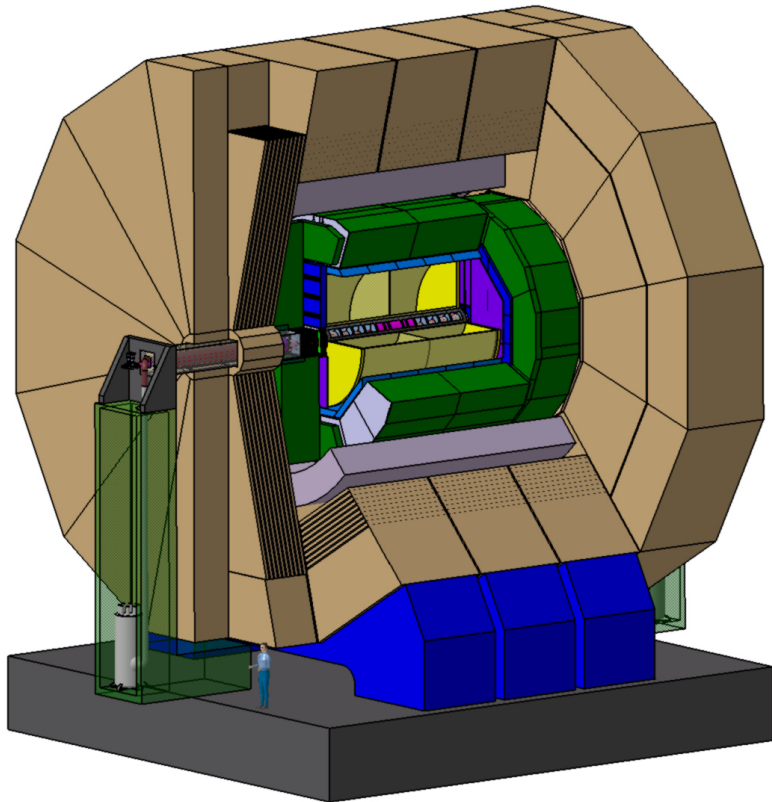

The New Geometry of the ILD Muon System in MOKKA

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U. Schneekloth
DESY

The Muon System of ILD Detector



The task of the muon system in ILD is the identification of muons, the momentum measurement is performed in the tracker.

Cryostat

– radial size : 75 cm

Yoke

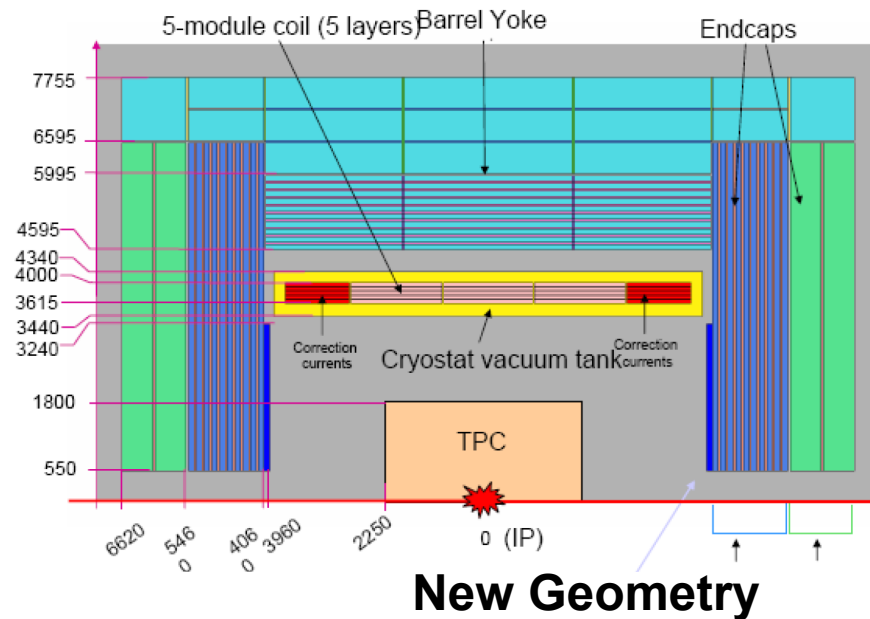
– Shape 12-fold
– Segmentation 10(100mm+40 mm gap)
and 3(barrel), 2(endcup)(560 mm+40 mm gap)

Instrumentation :

- scintillator strips (0.5 cm, thickness)

ILD detector for the International Linear Collider

New Geometry of the Muon System of ILD



Cryostat

Detailed geometry of cryostat and coils

Instrumentation: 2 double scintillator layers (0.5 cm)

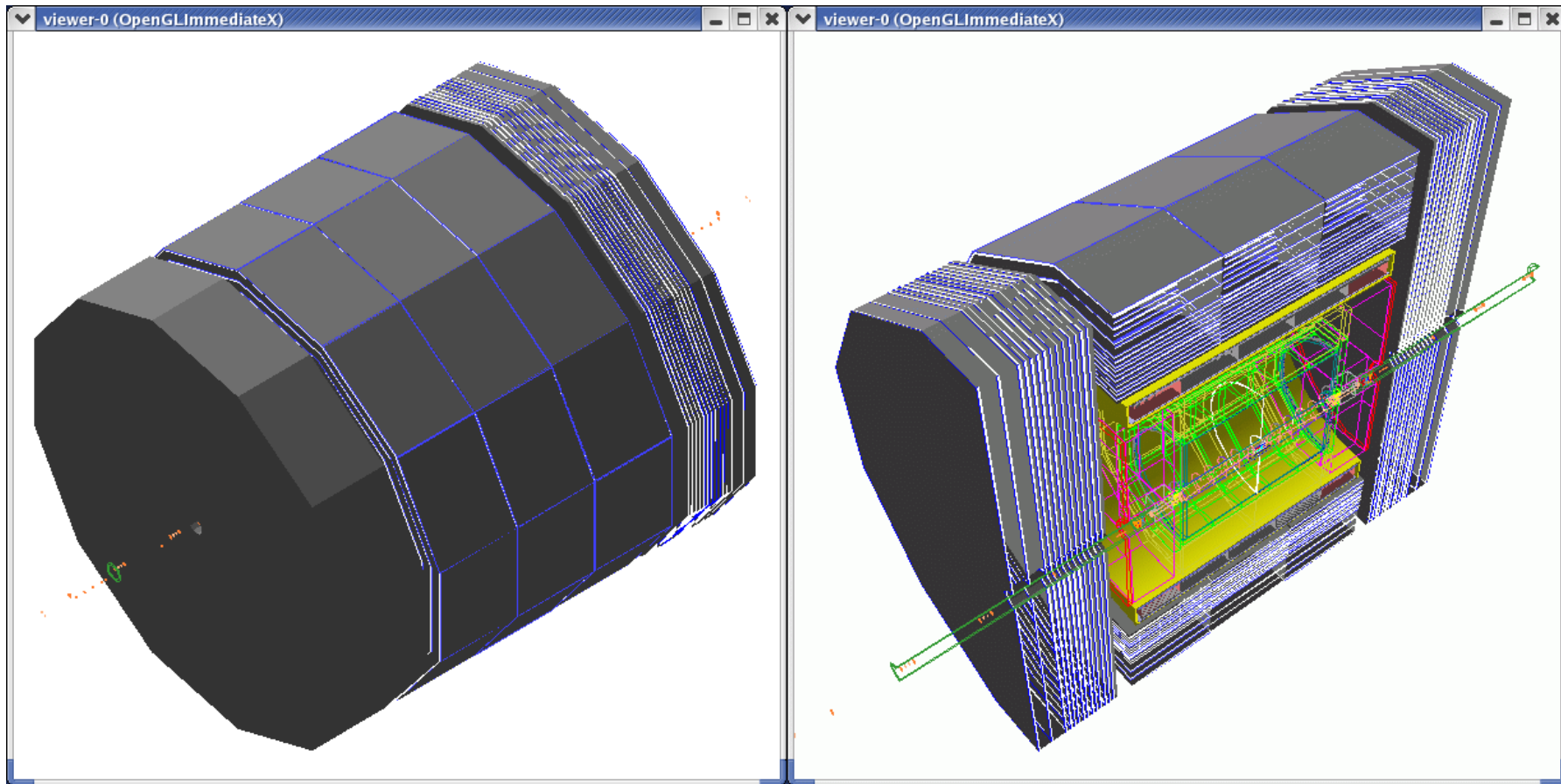
Magnet

Detailed Geometry: Modular Structure
increasing the thickness of barrel modules

Muon Detector Instrumentation

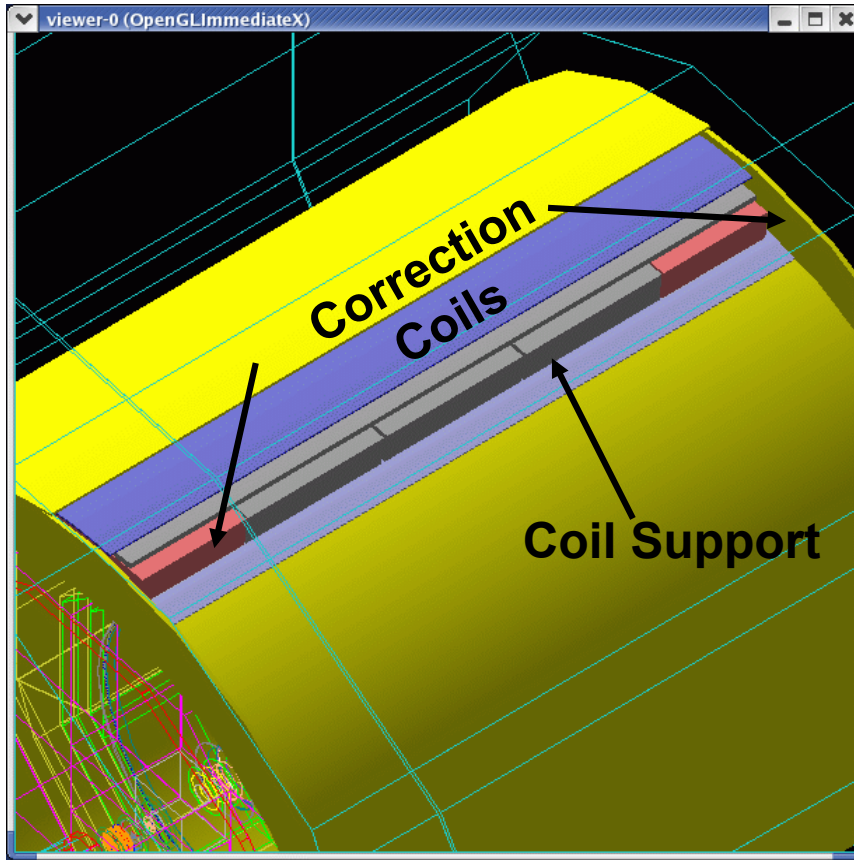
Scintillator sensitive layer,
additional 3 sensitive layers in Barrel and 2 in Endcap

New Geometry of the Muon System in ILD

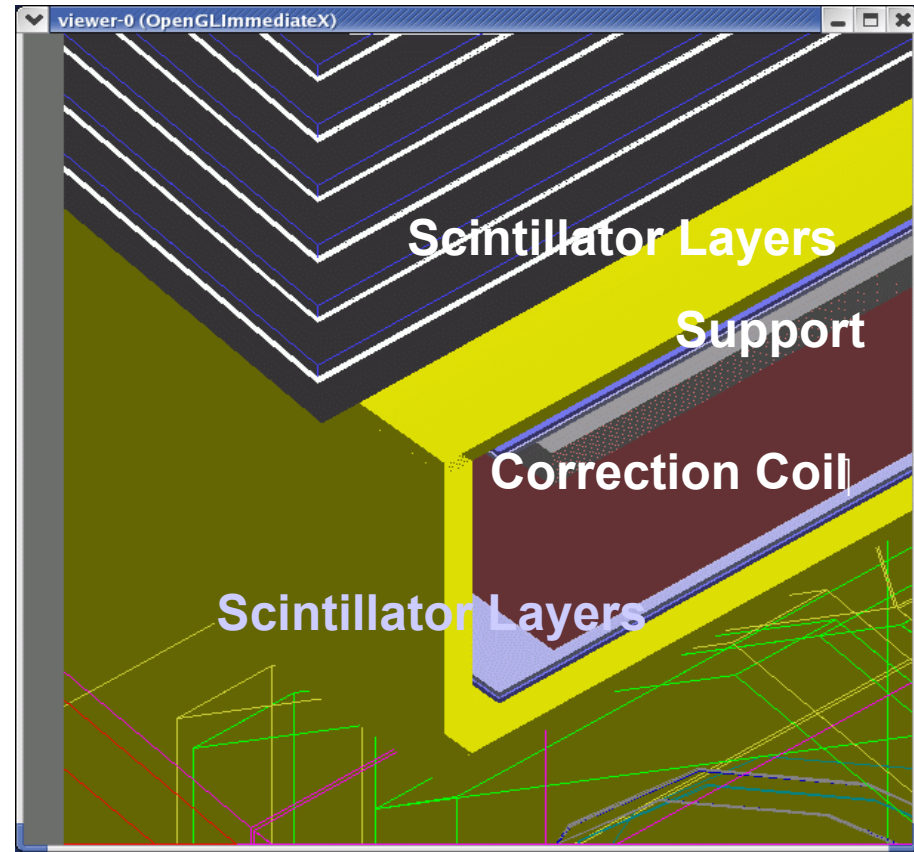


*New geometry of the ILD Yoke, Cryostat and Muon System in MOKKA:
3 Barrel segment, 2 Endcaps*

Detailed Geometry of Cryostat

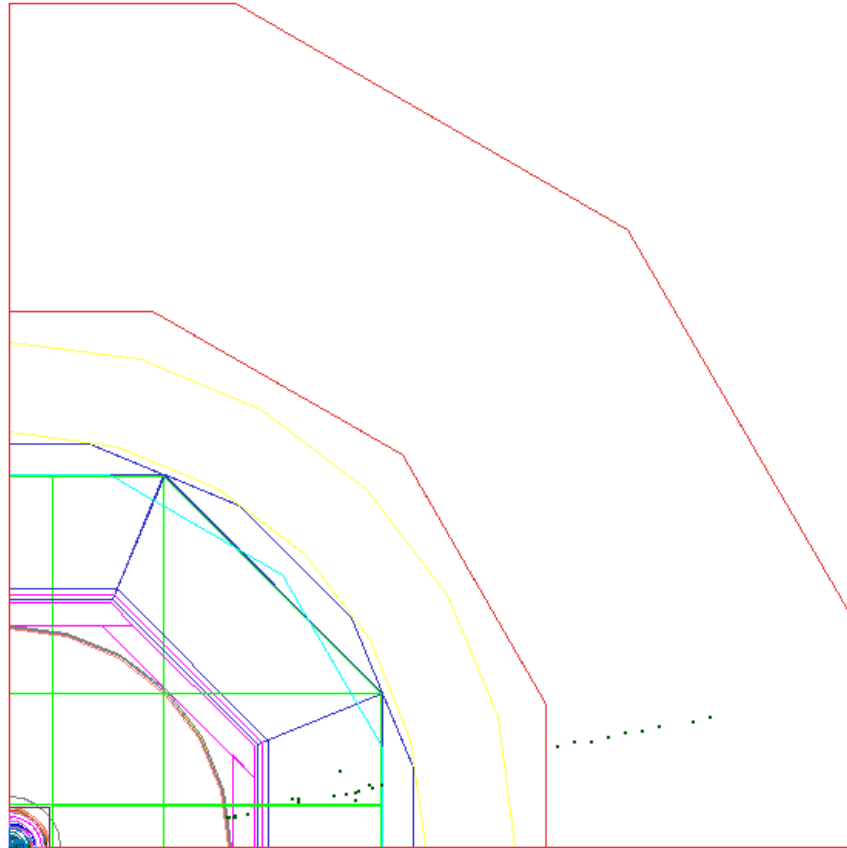


*New geometry of the ILD detector in MOKKA:
The Cryostat (yellow)*



*New geometry of the ILD detector in MOKKA:
Zoom inside the cryostat*

Muons Simulation in the New Geometry



*20 GeV muon simulated in the **old**
LOI - ILD detector geometry*



*20 GeV muon simulated in the **new** ILD
detector geometry*

Summary

- A new geometry for the muon system is now available within the simulation framework of the ILD detector (MOKKA) under test
- The geometry is nearer to the latest studies on the muon system
- More intensive exchange between the muon system design and simulation.

Future Plans

- Study of the muon identification efficiency in the ILD detectors, both isolated and within jets
- Optimization of the muon system parameters (cells, thickness...) according to the muon identification efficiency results.
- Development of a muon identification technique in ILD, based on the new developed geometry