ALICE Software and Computing Week
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The Muon Forward Tracker (MFT)

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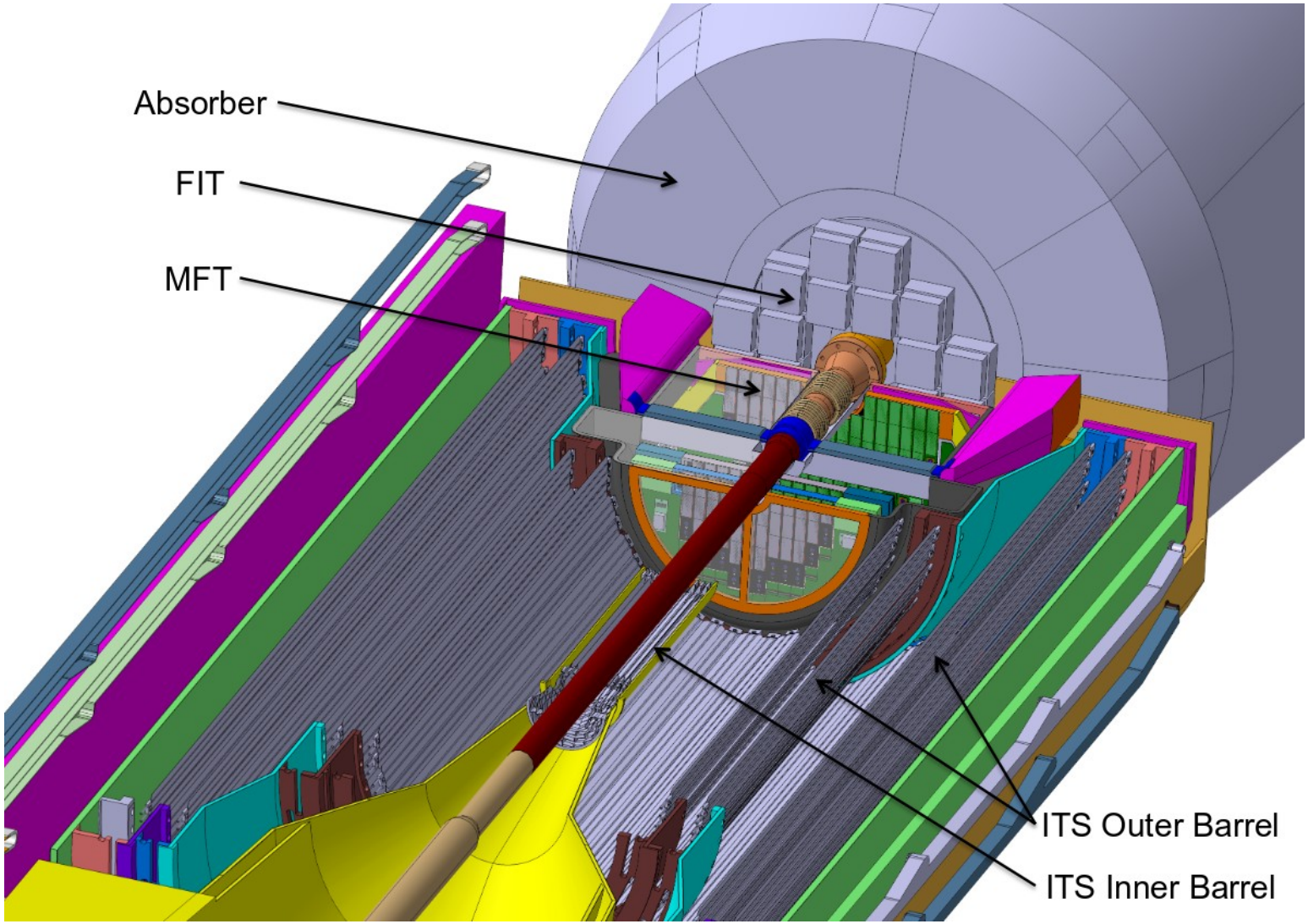
The MFT in the muon arm (MCH + MID)



The detector geometry

- obtained from a transfer of the TGeo geometry from AliRoot: a first, incomplete version (used for the TDR)
- adding further elements (support, barrel, etc.) as soon as the design was finalized
  - Subatech: mechanical design
  - LPC Clermont-Ferrand (integration, Franck)
  - IRFU Saclay (Satoshi)
  - PUCP University, Lima, Peru (Rodrigo, Carlos)
  - UFRGS University, Porto Alegre, Brazil (Rafael)
- the MFT has a very compact (squeezed) geometry, with many irregular elements in its structure

The simulation

- following the ITS developments: MFT uses the same sensor (with only one thickness, 50 μm)
  - much smaller number of sensors, ~25 times
  - forward geometry with very little regularity by symmetry
- DPL digitization (ROOT format and raw data) and clusterization
- in the current simulation tests, MFT uses the same readout parameters as the ITS for the simulation of the digits

The standalone reconstruction

- the track finding is rather simple, due to the magnetic field orientation
- using the information from the magnetic deflection is difficult (maybe some hint on the charge sign could be helpful for the matching with the muon spectrometer)
- high momentum tracks can be found by a simple linear seed filter
- low momentum tracks are found by a cellular automaton algorithm
  - ITS: 2-point tracklets, 3-point cells
  - MFT: 2-point cells

The standalone reconstruction

- the original code in AliRoot used an external vertex measurement
- the O2 implementation is sorting the clusters in a way that accelerates the cluster scan by decreasing the number of iterations
- the cluster sorting and the search window allows the track finding to work without an external vertex
- by the end of this week the track finding code will be on github

The track matching MFT + MCH

- it was studied in AliRoot:
  - connect (match) tracks
  - propagate the Kalman filter through the MFT
  - move the first track point to the first MFT station
  - calculate the vertex with high precision

Calibration and quality control

- starting or recently started activity
  - IRFU, Saclay: CCDB (Satoshi) and alignment (Javier)
  - CTU, Prague: quality control (Guillermo, Katarina)

- other groups: Hiroshima, Saha