

# Muons in ATLANTIS

# The Drift Tubes

The drift tubes are long tubes in which only the position of the tube with respect to the origin and the drift radius are precise positions, ie it is essentially a 2D detector

The problem is to find the right projection for viewing the muon information

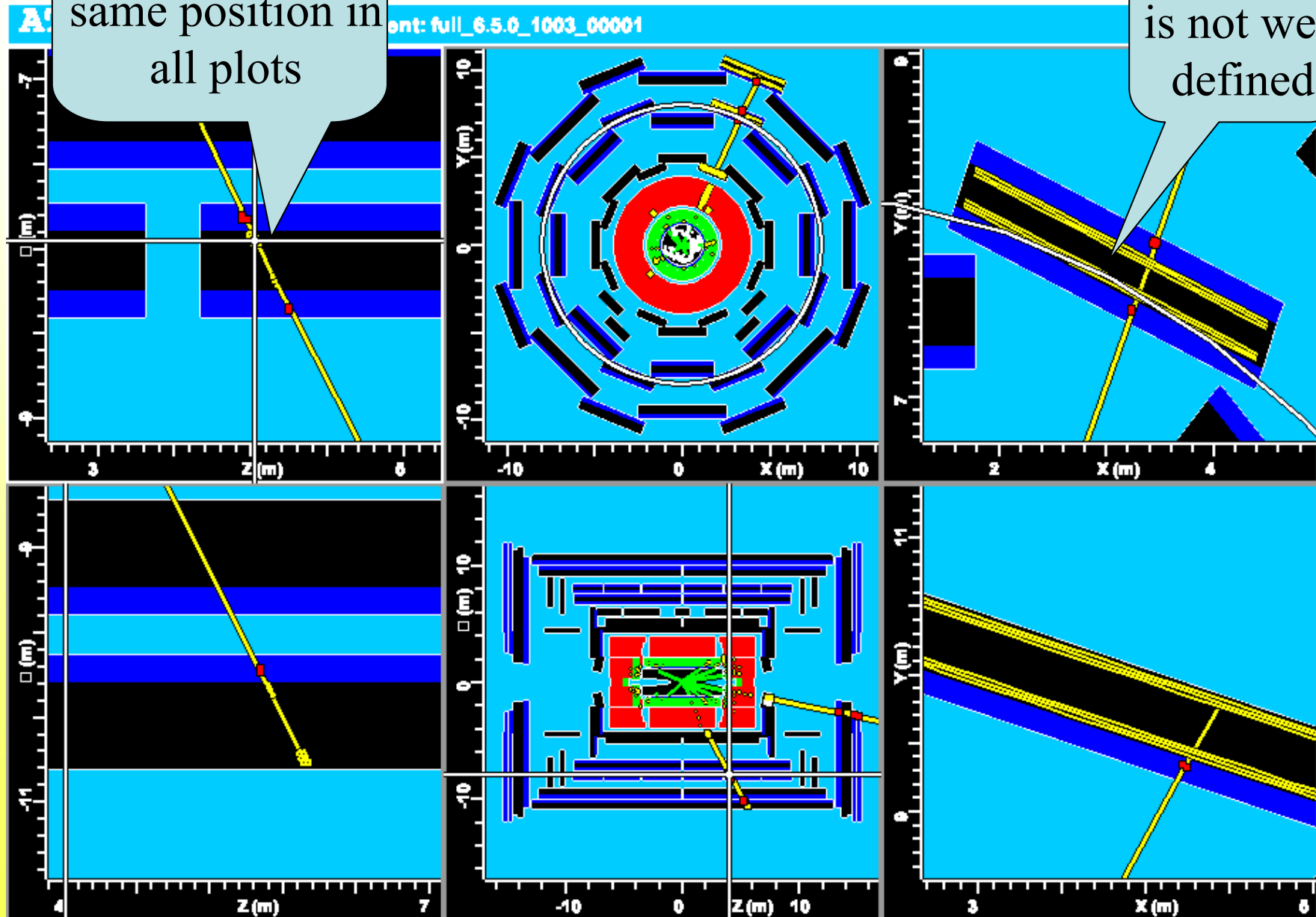
# The $\rho$ -Z projection

The  $\rho$ -Z projection may be used to view 3D tracks and hits and to associate them to data in the calorimeters. It may also be used to provide a rough association of tracks to the MDT, RPC z-strips and TGC  $\rho$ -strips data from all sectors superimposed. To make this possible the muon data are not drawn at  $\rho$  but rather at  $\rho'$  determined by projecting  $\rho$  onto the  $\phi$ -axis of the corresponding sector.

# The Barrel

Cursor represents same position in all plots

$\rho$  of hit is not well defined



# The $X'$ - $Z$ projection

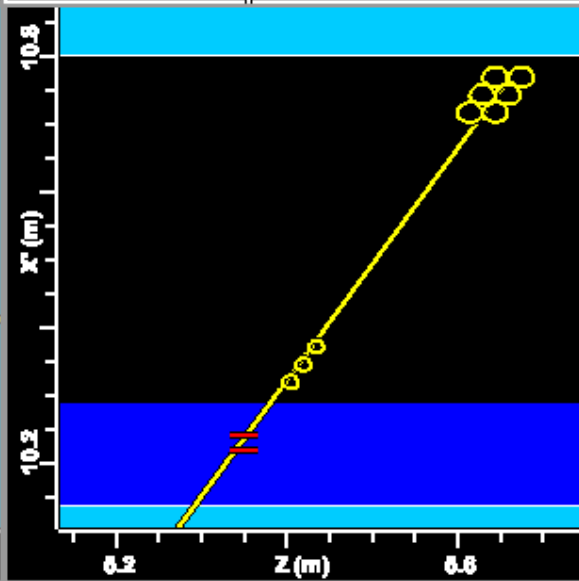
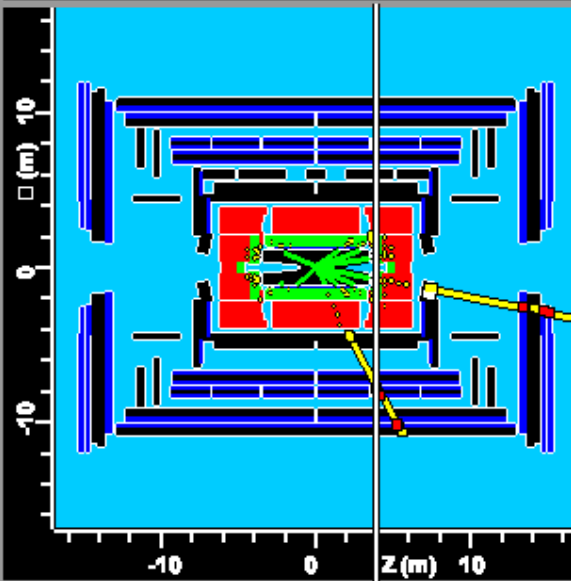
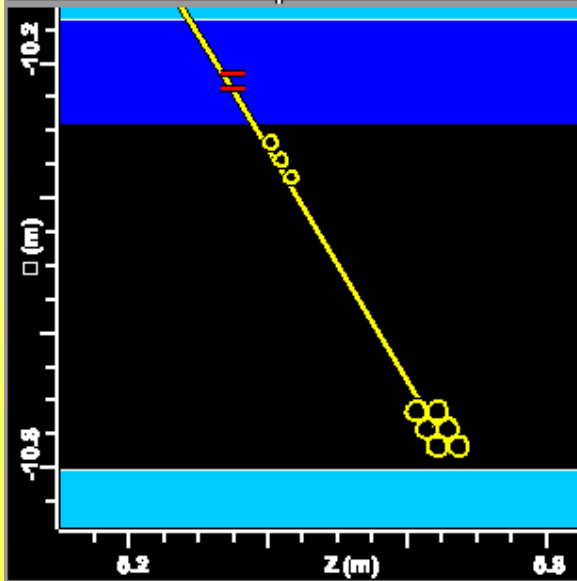
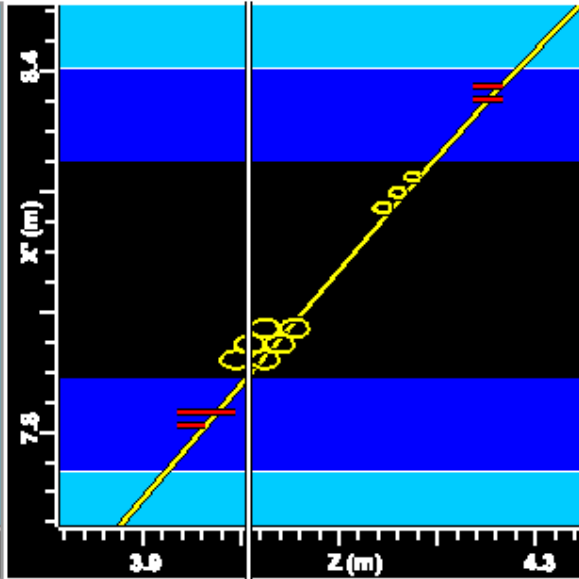
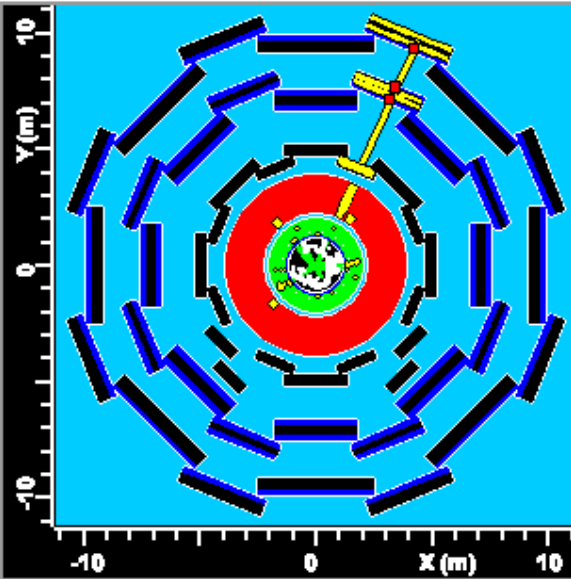
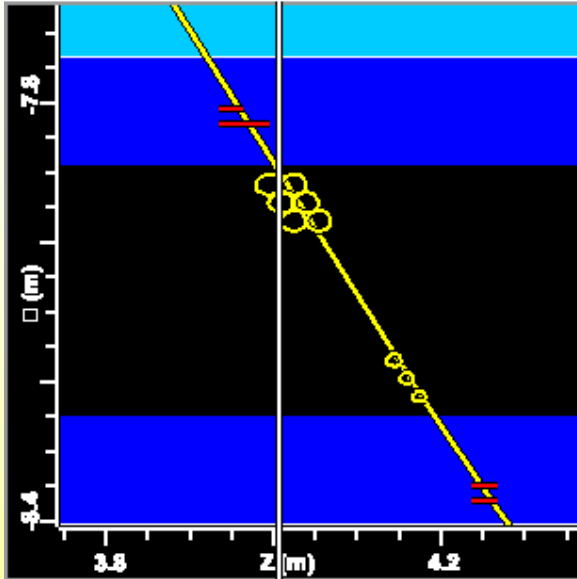
Due to the maximum angle between jet and  $Z$  axis in the  $X'/Z$  projection the sub detector sectors lying in the jet direction can be displayed for the barrel and the endcap. This is specially interesting for the MDT tubes. If only one **MDT sector** is displayed and the viewing direction is perpendicular to the sector angle, the MDT tubes can be represented as small circles.

$\rho Z$   
view

# The Barrel: $\rho Z$ vs $X'Z$

$X'Z$   
view

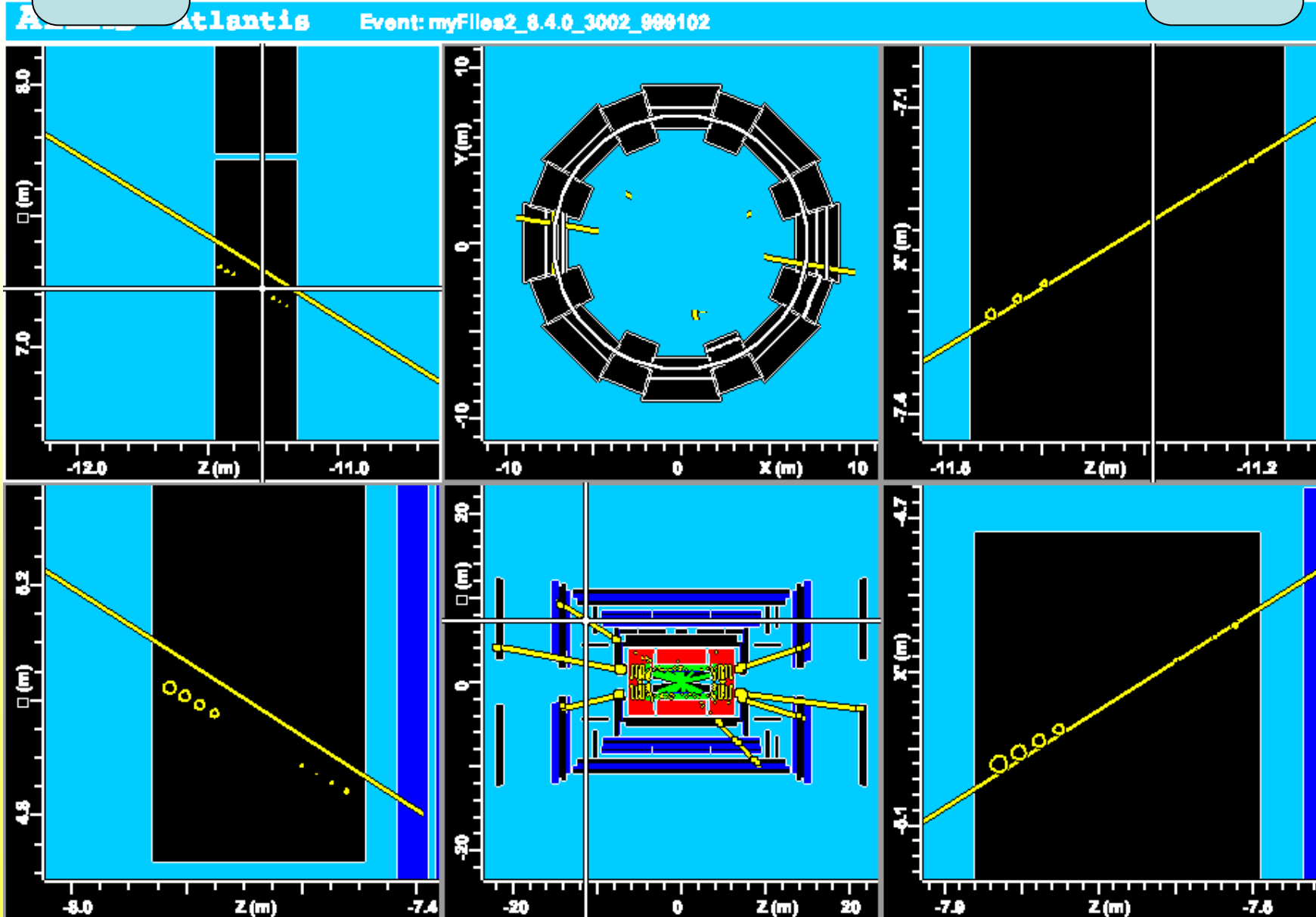
ATLAS Atlantis Event: full\_6.5.0\_1003\_00001



$\rho Z$   
view

# The EndCap : $\rho Z$ vs $X'Z$

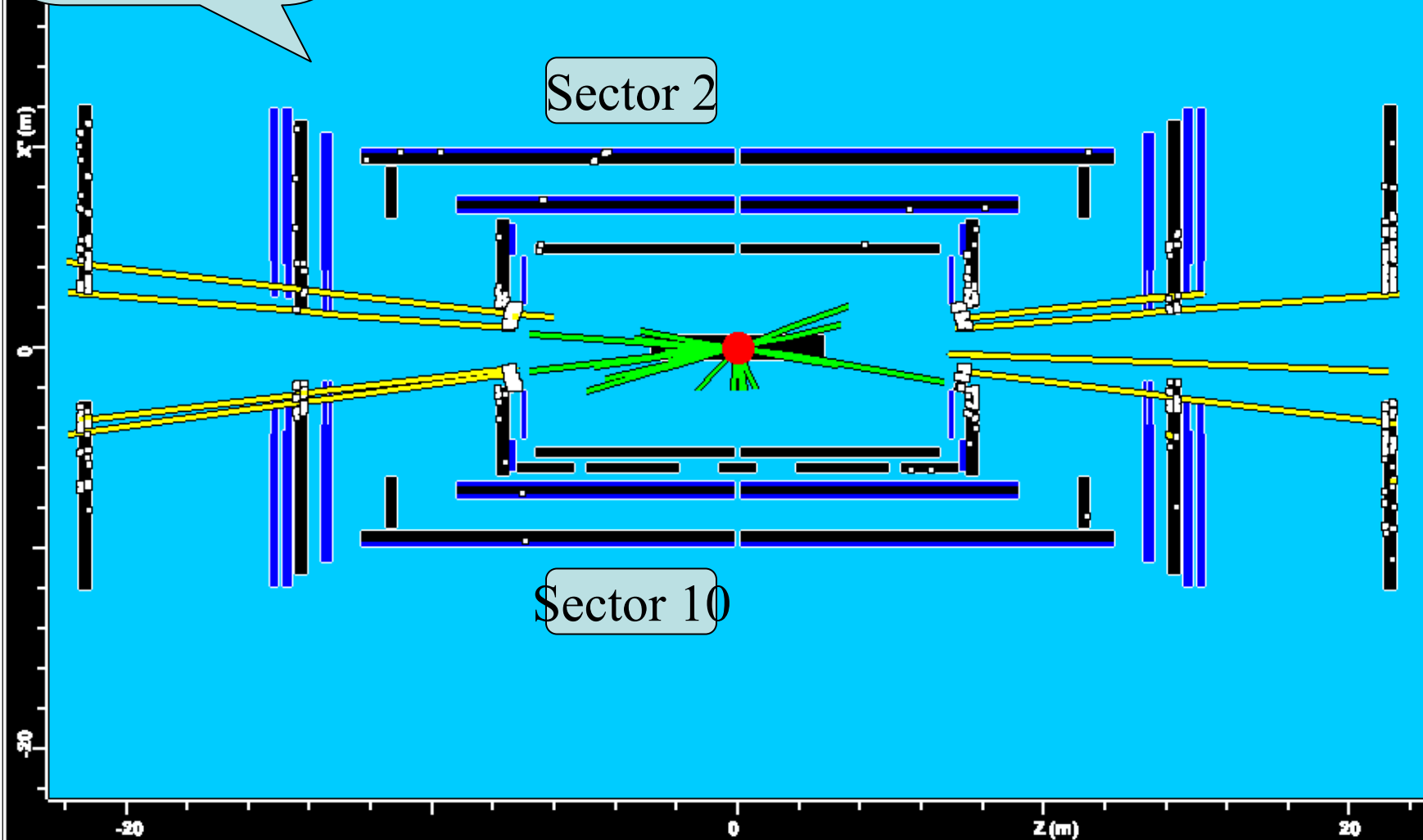
$X'Z$   
view



# Viewing the sectors

Event: myFiles2\_8.4.0\_3002\_999103

Clicking  
“next sector”





# Data for Display

Raw Data for MDT, CSC, RPC and TGC

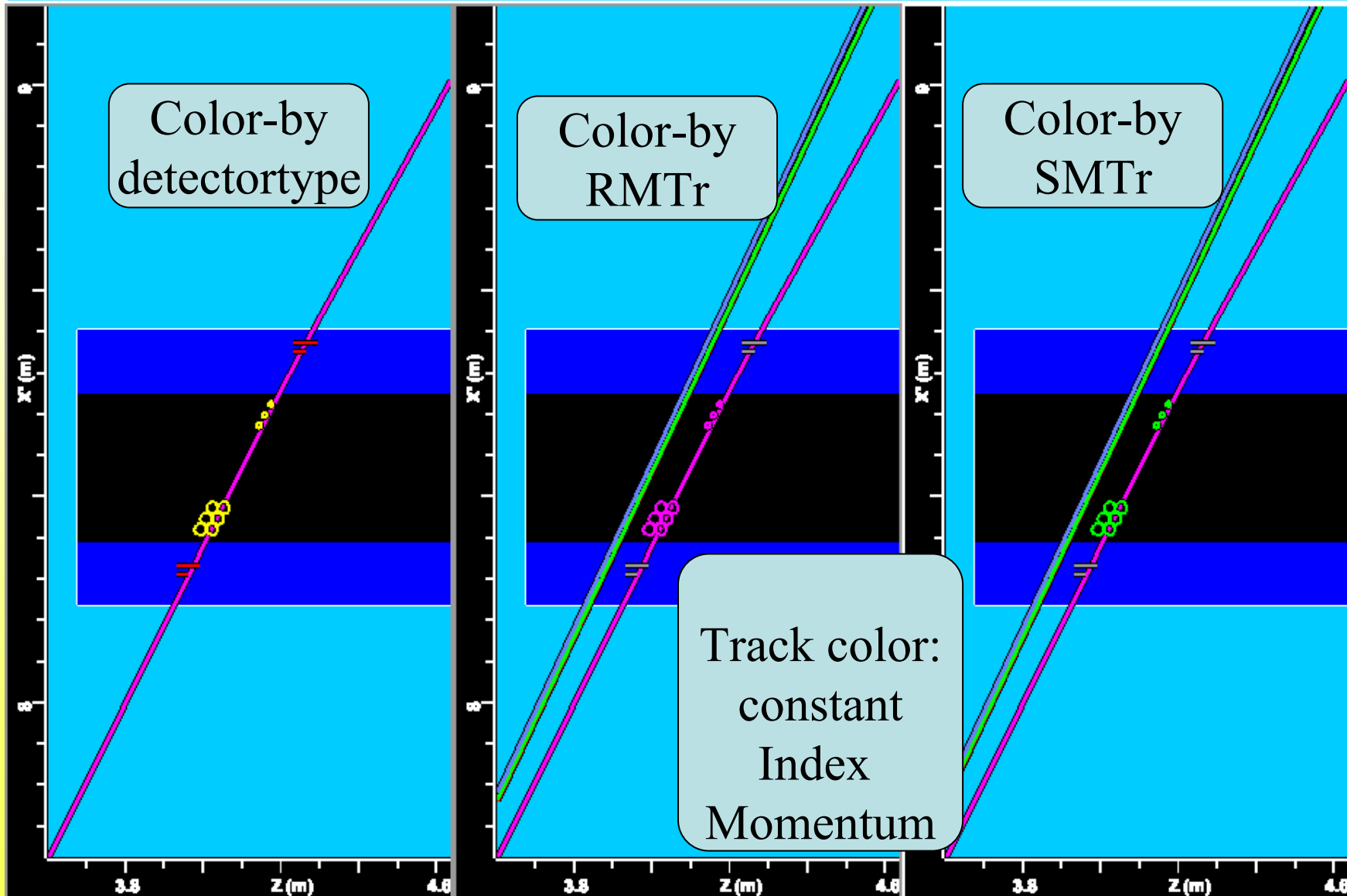
MSEG:            x,y,z, cotTheta,phi, associated hits  
                  **ONLY for TestBeam**

RMTr (MOORE)    perigee parameters: x,y,z  
                  perigee: phi, cotTheta, Pt  
                  Polyline points (from ScattererParameters)

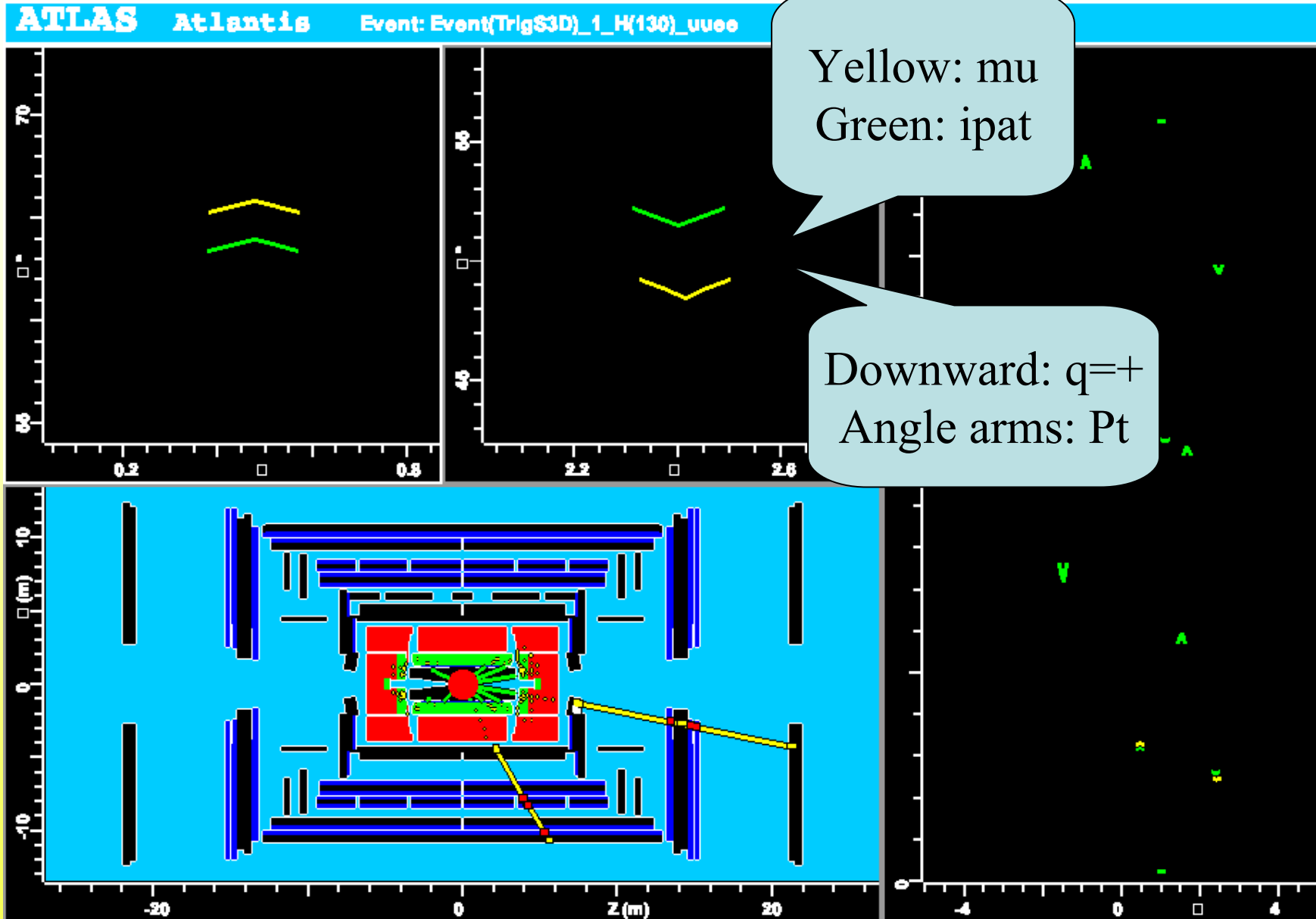
SMTr            truth information

# Coloring hits and tracks

ATLAS Atlantis Event: Event(Trig\$3D)\_1\_H(130)\_uuee

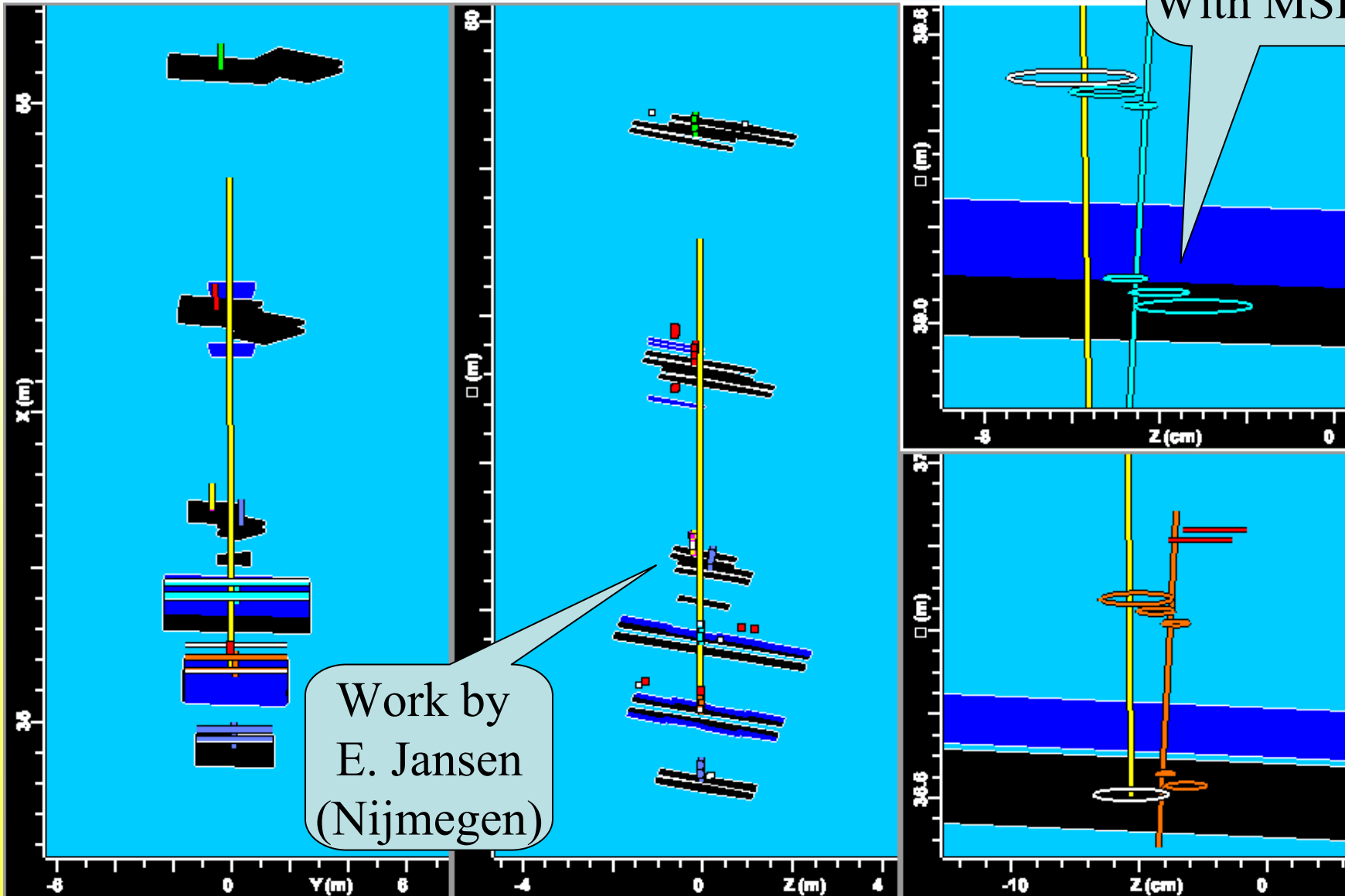


# Muon+Inner detector: V-plot



# H8 Testbeam

ATLAS Atlantis Event: JiveXML\_2102671\_00039



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Hits  
Associated  
With MSEG

# Immediate future

1. Requests from the muon group (so far, in random order):
  - More detailed information on hits and tracks
  - Residual plot
  - Simulated hits
  - Simulated tracks from MuonEntryRecord
  - Geometry vs event data information
2. Debugging..
3. Atlantis tutorial: May 27 (software week)