

MAUS - Feature #509

Tracker Geometry

20 June 2011 18:16 - Tunnell, Christopher

Status:	Open	Start date:	20 June 2011
Priority:	Normal	Due date:	
Assignee:	Heidt, Christopher	% Done:	0%
Category:	Tracker	Estimated time:	0.00 hour
Target version:	Future MAUS release		
Workflow:			
Description			
Somebody needs to write a description of the tracker MICE modules and the SciFiDoubletParams and SciFiPlane to make sure the geometry is working. Things like are the number of fibres right? There has been some confusion related to this.			
The software group requires a paragraph on the checks that have been done and what reference (ie. mice note) stores the values the geometry has been checked against.			

History

#1 - 28 June 2011 20:07 - Santos, Edward

The number of fibres corresponds to the fiducial area in all stations. We must re-think if this is the right way to do the fiducial cut. The alternative is to make the full plane a SD and apply the cut later.

#2 - 28 June 2011 21:34 - Tunnell, Christopher

I would have assumed fiducial volume cuts were done for MC at the same place in the dataflow that they were done for data. At least in SNO, we always did fiducial volume (or area in this case) cuts fairly late in the game.

So you're saying that we currently only have MC for our fiducial volume?

#3 - 04 July 2011 08:37 - Rogers, Chris

Agree with Tunnell - we want to see what we lose from fiducial cut (helps to understand e.g. hit in tracker 1 but no hit in tracker 0, etc)

#4 - 06 August 2011 15:01 - Santos, Edward

- Assignee set to Santos, Edward

#5 - 25 October 2011 22:50 - Tunnell, Christopher

- Assignee changed from Santos, Edward to Lysenko, Oleg

Edward: can you correct what you wrote about the fibres?

Oleg: Can you add what you figured out about the geometry?

#6 - 26 October 2011 12:46 - Santos, Edward

Briefly:

- The fibre parameters used to construct the SciFi sensitive detector are compared with the ones in MICE Note 135 (this is one of the unit tests).
- The number of fibres simulated depends on the area of the sensitive detector. We extended this to the full 32 cm diameter of each station. The fiducial cut, which brings this diameter down to 30 cm can be introduced later by the user in his analysis.
- The number of channels (212, 214 or 215, depending on the station/plane) is verified in another unit test for all 30 planes of the SciFi trackers.

#7 - 29 October 2011 05:14 - Lysenko, Oleg

- File *Station_layout.ppt* added

- File *Plane_order.ppt* added

Here are a few slides made by Geoff Barber. The first slide shows the view of the station onto the polished face of the connector. In the NIM paper, this view corresponds to the right direction on Fig. 19. The second slide shows the plane order as it was built. In the beam line, an observer is placed such that 'V' plane is the closest, and 'X' plane is the furthest to him. So in fact he can see the station layout in the mirroring to what is shown on slide 1. 'V' plane has +120 degrees rotation counterclockwise with respect the observer, 'W' plane has -120 degrees correspondingly, and 'X' plane is fixed without any rotation.

All this information is reflected in MiceModule files, and was translated in a DGML format for uploading in the configuration database.

In GDML, the related orientation of the components is achieved by nesting. For example, the following expression:

```
<Component name = "Tracker2Station2">
<Position x = "-0.6341" y = "0.037" z = "350.0" unit = "mm"/>
<Rotation x = "0.0" y = "0.0" z = "0.0" unit = "degree"/>
<Component name = "TrackerViewV">
<Position x = "0.0" y = "0.0" z = "-0.6398" unit = "mm"/>
<Rotation x = "0.0" y = "0.0" z = "120.0" unit = "degree"/>
</Component>
<Component name = "TrackerViewW">
<Position x = "0.0" y = "0.0" z = "0.0125" unit = "mm"/>
<Rotation x = "0.0" y = "0.0" z = "-120.0" unit = "degree"/>
</Component>
<Component name = "TrackerViewX">
<Position x = "0.0" y = "0.0" z = "0.6648" unit = "mm"/>
<Rotation x = "0.0" y = "0.0" z = "0.0" unit = "degree"/>
</Component>
</Component>
```

shows the relative spacing and orientation of the three planes 'V', 'W', and 'X' with respect to the Station2 in Tracker2. So whenever the tracker and/or its station is rotated, the internal spacing and orientation of planes within single station will not change. This is very convenient and allows to avoid changing of all internal parameters if the top component is moved/rotated.

#8 - 22 November 2012 07:52 - Rogers, Chris

- Assignee changed from Lysenko, Oleg to Heidt, Christopher

Chris, this is the old issue for tracker geometry/CDB... I think you are looking into this right?

#9 - 29 November 2012 04:20 - Heidt, Christopher

Yeah I'll look into this.

Files

Station_layout.ppt	254 KB	29 October 2011	Lysenko, Oleg
Plane_order.ppt	91.5 KB	29 October 2011	Lysenko, Oleg