Subject: Problems with MVD geometries
Posted by Simone Bianco on Fri, 08 May 2009 08:24:52 GMT

View Forum Message <> Reply to Message

Hi,

I am facing some problems while defining detectors for the forward part of the MVD. If I use a rectangular detector (see the screenshot from the eventdisplay that I am attaching) everything works fine, but if I introduce a trapezoidal detector (as the strips modules must be) the simulation is not storing any hit on this detector. I checked (see trapezoidal.png) and there are particles crossing my detector, however there are no MVD hits. I tryed with different distances from the center of the frame and the only thing making it work is to change the shape of the detector from a trapezoidal to a rectangular one. I also made a check with a circular detector and it is working. So the only shape showing problem seems to be the trapezoidal one.
I attach to this message the .root files with the two different geometry definitions and the macros which I used (runMvdSim.C and eventDisplay.C).
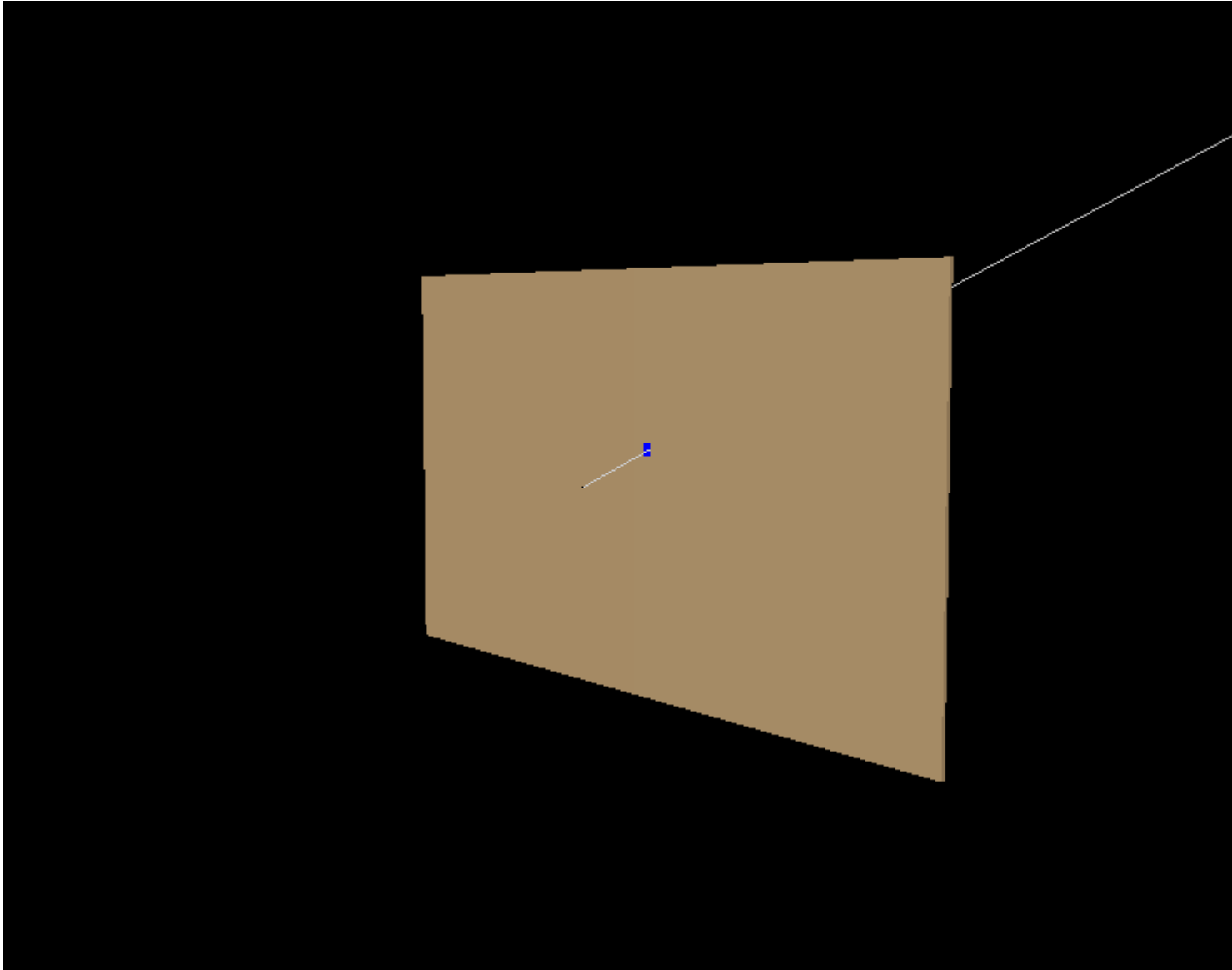Does anybody have an idea about the reason of this behaviour?
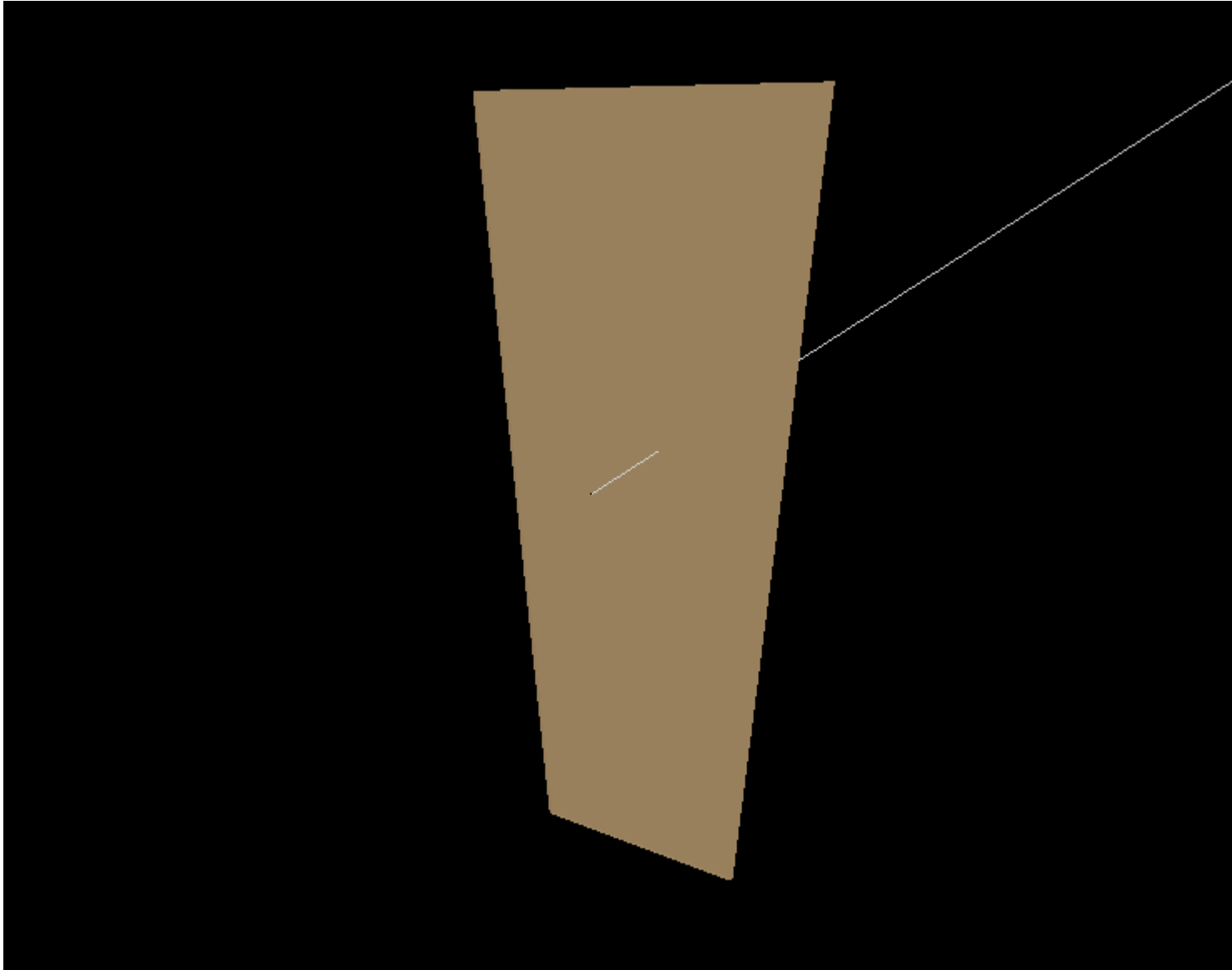
Cheers,

Simone

File Attachments
1) Rectangular.png, downloaded 1266 times

2) Trapezoidal.png, downloaded 1124 times

Subject: Re: Problems with MVD geometries
Posted by Ralf Kliemt on Fri, 08 May 2009 12:44:51 GMT
View Forum Message <> Reply to Message

Hello everyone,

A comment:
I already communicated to Simone and it looks like it is not connected to a flaw in the Mvd code. I suspect our geometry handling to be not coming along with the trapezoids. Were there changes lately in root or the framework?

The geometry was retrieved from the a CAD drawing with the StepConverter.

Ralf.

Subject: Re: Problems with MVD geometries
Posted by Tobias Stockmanns on Tue, 12 May 2009 07:47:50 GMT

Dear Ralf and Simone,

can you please check how the trapezoid is translated from CAD to root. Is it done as a trap or as an arbitrary8?

You can check this in CxlInfoPart.cc. If the first line of IsTrap() is commented out (return false), than it gives back traps, otherwise Arb8.

Independent how the setting is, change this line and check if now hits are produced.

Cheers,

Tobias

Subject: Re: Problems with MVD geometries
Posted by Simone Bianco on Tue, 12 May 2009 08:19:52 GMT

Dear Tobias,

Thanks for your suggestion. The first line of IsTrap() was commented out, I tried uncommenting it and recompiling the converter, but the results are the same: I see the correct trapezoidal shape in the event display, but I have no hits on the detector. I attach to this message the .root file generated with this change in the cad converter.

Cheers,

Simone

File Attachments
1) Example2-Trapazoidal2.root, downloaded 469 times

Subject: Re: Problems with MVD geometries
Posted by Tobias Stockmanns on Tue, 12 May 2009 08:59:41 GMT

Hi Simone,

add the line "return false;" at the beginning of the method IsBox(). Rerun the converter and your simulation macro. Do the rectangular sensors still show hits?

Cheers,

Tobias

Subject: Re: Problems with MVD geometries
Posted by Simone Bianco on Tue, 12 May 2009 09:09:06 GMT
View Forum Message <> Reply to Message

Yes, it still shows hits also adding "return false" in the IsBox() method.

Subject: Re: Problems with MVD geometries
Posted by Tobias Stockmanns on Tue, 12 May 2009 09:14:59 GMT
View Forum Message <> Reply to Message

Hi Simone,

then I think something else is wrong. Because now the trapezoidal and the rectangular sensor are made with the same RootGeometry (Arb8).

Have you changed the name of the trapezoidal sensor? Is this name in the list of sensitive detectors in the constructor of PndMvdDetector?

Ciao, Tobias

Subject: Re: Problems with MVD geometries
Posted by Simone Bianco on Tue, 12 May 2009 09:21:56 GMT
View Forum Message <> Reply to Message

I am sorry, before I made a mistake and I was still using the old geometry file. So, now I tried with the new one (rectangular shape, converted with the "return false" line in the IsBox() method) and I got no hits.
In this situation I don't see anymore the detector in the event display (while I was able to see the trapezoidal one).
The names of the volumes contain "StripActive" and are the same for the different geometries I was using.

Cheers,

Simone

Subject: Re: Problems with MVD geometries
Posted by Tobias Stockmanns on Tue, 12 May 2009 09:36:53 GMT
View Forum Message <> Reply to Message

Hi Simone,

it seems that there is a problem with the Arb8 geometry. Arb8 is sensitive to the order you define the 8 points. Maybe this could be the problem. Do you get any warnings from ROOT that some geometries are strange?

Unfortunately I do not have the time at the moment to debug it by myself. Maybe you can have a look into the root-description (hopefully they say something about it) and check it in the file CxlBuildPart_Arb8.cc.

Ciao,

Tobias

Subject: Re: Problems with MVD geometries
Posted by Simone Bianco on Tue, 12 May 2009 12:02:21 GMT
View Forum Message <> Reply to Message

this is part of the output that I get from the simulation:

Register Volume : StripActiveoTrapM id
Sensitive Volume : StripActiveoTrapM id
Register Volume : StripActiveoTrapMoPartAss id
Sensitive Volume : StripActiveoTrapMoPartAss id
FairMCApplication::ConstructGeometry() : Now closing the geometry
Info in <TGeoManager::CheckGeometry>: Fixing runtime shapes...
Info in <TGeoManager::CheckGeometry>: ...Nothing to fix
Info in <TGeoManager::CloseGeometry>: Counting nodes...
Info in <TGeoManager::Voxelize>: Voxelizing...
Info in <TGeoManager::CloseGeometry>: Building cache...
Info in <TGeoNavigator::BuildCache>: --- Maximum geometry depth set to 100
Info in <TGeoManager::CloseGeometry>: 4 nodes/ 4 volume UID's in FAIR geometry
Info in <TGeoManager::CloseGeometry>: ----------------modeler ready----------------
Info in <TG4RootNavMgr::SetNavigator>: TG4RootNavigator created and registered to G4TransportationManager
Running TVirtualMCApplication::ConstructGeometry
****
  Geant4 version Name: geant4-09-01-patch-02   (9-May-2008)
                Copyright : Geant4 Collaboration
                Reference : NIM A 506 (2003), 250-303
                    WWW : http://cern.ch/geant4
****

Info in <TG4RootNavMgr::Initialize>: Creating G4 hierarchy ...
Info in <TGeoManager::ConvertReflections>: Converting reflections in: FAIRGeom - FAIR geometry ...
Info in <TGeoManager::ConvertReflections>: Done
===> GEANT4 materials created and mapped to TGeo ones...
===> GEANT4 physical volumes created and mapped to TGeo hierarchy...
INFO: TG4RootDetectorConstruction::Construct() finished
TG4PostDetConstruction::Initialize
G4 Stat: instantiated 4 logical volumes
              3 physical volumes

Info in <TG4RootNavMgr::ConnectToG4>: ROOT detector construction class connected to
G4RunManager
Adding HadronPhysicsList QGSP_BERT_EMV

<<< Geant4 Physics List engine packaging library: PACK 5.4
<<< Geant4 Physics List simulation engine: QGSP_BERT_EMV 1.0

Adding SpecialPhysicsList stepLimiter+specialCuts+specialControls
Debug mode is switched on.
Visualization Manager instantiating...
Visualization Manager initialising...
Registering graphics systems...

It seems to me that there are no strange messages. However, I will have a look at the file
regarding Arb8.

Cheers,

Simone