Subject: negative masses in geometry (TG3)
Posted by Olaf Hartmann on Wed, 20 Apr 2011 12:36:40 GMT
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Dear all,

when calculating the masses of the volumes in PandaRoot, I observed i.a. several masses with negative values, which actually comes from a negative volume size (!). Example:

Calculating the physical volume (which for a TGeoXtru is [length]³):

root [43] gGeoManager->GetVolume("Supporto2")->Capacity()
(const Double_t)(-4.86071999981845693e+03)

These are the geo parameters of this object:

root [42] gGeoManager->GetVolume("Supporto2")->InspectShape()
*** Shape Supporto2: TGeoXtru ***
    Nz   = 2
    List of (x,y) of polygon vertices:
    x =   134.00000 y =   184.00000
    x =   130.51000 y =   184.00000
    x =   130.51000 y =   176.00000
    x =   134.00000 y =   176.00000
    x =   134.00000 y =   178.00000
    x =   156.70000 y =   178.00000
    x =   156.70000 y =   176.00000
    x =   159.20000 y =   176.00000
    x =   159.20000 y =   184.00000
    x =   156.70000 y =   184.00000
    x =   156.70000 y =   182.00000
    x =   134.00000 y =   182.00000
     plane 0: z=   -0.00000 x0=   0.00000 y0=   0.00000 scale=   1.00000
     plane 1: z=   2.00000 x0=   0.00000 y0=   0.00000 scale=   1.00000
  Bounding box:
*** Shape Supporto2: TGeoBBox ***
    dX =   14.34500
    dY =   4.00000
    dZ =   1.00000
    origin: x= 144.85500 y= 180.00000 z=   1.00000

Shouldn't it be that values like volume and mass always come out with positive values?
Of course I can ask for the abs value in the code to avoid negative values.

Cheers
Olaf.

Subject: Re: negative masses in geometry (TG3)
Posted by Mohammad Al-Turany on Wed, 20 Apr 2011 13:19:21 GMT
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Hi Olaf,

it could be a bug in TGeoXtru::Capacity:

Quote:
Double_t TGeoXtru::Capacity() const
{
// Compute capacity [length^3] of this shape.
  Int_t iz;
  Double_t capacity = 0;
  Double_t area, dz, sc1, sc2;
  TGeoXtru *xtru = (TGeoXtru*)this;
  xtru->SetCurrentVertices(0.,0.,1.);
  area = fPoly->Area();
  for (iz=0; iz<fNz-1; iz++) {
    dz = fZ[iz+1]-fZ[iz];
    if (TGeoShape::IsSameWithinTolerance(dz,0)) continue;
    sc1 = fScale[iz];
    sc2 = fScale[iz+1];
    capacity += (area*dz/3.)*(sc1*sc1+sc1*sc2+sc2*sc2);
  }
  return capacity;
}

in the line dz = fZ[iz+1]-fZ[iz]; if fZ[iz+1] is smaller than fZ[iz] then you get a negative value.
Anyway I did not find the volume "Supporto2" in the geometry. can you please tell me where to
find it or post a root file with a TGeoManager having this problem.

regards

Mohammad

Subject: Re: negative masses in geometry (TG3)
Posted by Olaf Hartmann on Wed, 20 Apr 2011 14:10:05 GMT
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Hi Mohammad,

I'm speaking about

FairModule *Magnet= new PndMagnet("MAGNET");
Magnet->SetGeometryFileName("FullSuperconductingSolenoid_v831.root");
fRun->AddModule(Magnet);

in trunk/geometry/
(svn revision 10849)

Cheers
Olaf.

Subject: Re: negative masses in geometry (TG3)
Posted by Mohammad Al-Turany on Wed, 20 Apr 2011 20:56:17 GMT
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HI Olaf,

I am not able to reproduce this negative values! which macros you use? I tried the
sim_complete_stt.C (using FullSuperconductingSolenoid_v831.root and switching off the MDT
magnet). but I get the following:

Quote:root [7] gGeoManager->GetVolume("Supporto2")->Capacity()
(const Double_t)2.77439999997116217e+02

However, checking the overlaps it looks very bad:
Quote: root [3] gGeoManager->CheckOverlaps()
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within
0.1
Warning in <TGeoChecker::CheckOverlaps>: Volume SuperconductingSolenoidov831 with 3
daughters but not voxelized
Warning in <TGeoChecker::CheckOverlaps>: Volume Cryostatov830o2 with 12 daughters but
not voxelized
Warning in <TGeoChecker::CheckOverlaps>: Volume SuperconductingCoilov831 with 3
daughters but not voxelized
Check overlaps: [==========] 477699 [100.00 %]   TIME 00:18:20
Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 391

regards

Mohammad

Subject: Re: negative masses in geometry (TG3)

Posted by StefanoSpataro on Thu, 21 Apr 2011 06:00:13 GMT

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The overlaps are already known, Tobias could not fix them.

Subject: Re: negative masses in geometry (TG3)
Posted by Olaf Hartmann on Thu, 21 Apr 2011 06:35:00 GMT

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Dear Mohammad,

I'm still using the jan10 external packages (to avoid the problem with the huge memory usage), so maybe the problem has been fixed in the new Root version. I'll check it.

My geometry is built in the sim_radmap.C macro.

Cheers
Olaf.

Subject: Re: negative masses in geometry (TG3)
Posted by Olaf Hartmann on Thu, 21 Apr 2011 08:26:11 GMT

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Hi Mohammad,

Olaf Hartmann wrote on Thu, 21 April 2011 08:35
I'm still using the jan10 external packages (to avoid the problem with the huge memory usage), so maybe the problem has been fixed in the new Root version. I'll check it.

It was indeed the case. With the feb11 the negative values vanished.
I withdraw my objection.

Cheers
Olaf.