Subject: geometry overlaps for PANDA subdetectors
Posted by Maria Patsyuk on Thu, 18 Jul 2013 10:49:09 GMT
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Dear all,

we checked the geometry (supersposition of a number of subdetectors) using the following macro

macro/run/sim_complete.C

without event generation (the following lines were commented out:
//fRun->Run(nEvents);
//exit(0);
)

And we got a number of overlaps (see below).

Does this macro suppose to have these overlaps?

What do the overlaps mean in terms of the resulting data sample? Do they spoil the simulated data?

What is the right macro to run simulation with at least STT, EMC, SciTil and DIRC detectors put together?

Best regards,
Maria Patsyuk

root [1] gGeoManager->CheckGeometryFull()
==========
STAGE 1: Overlap checking by sampling within 10 microns
==========
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within 0.001
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps by sampling <s> for cave and daughters
Info in <TGeoNodeMatrix::CheckOverlaps>: === NOTE: Extrusions NOT checked with sampling option ! ===
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 188.12 +/- 71.1025 [cm3] for daughters of FullSuperConductingSolenoidov831
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 13.4371 +/- 13.4371 [cm3] for daughters of Cryostatov830o2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 14 overlaps adding-up to 268747 +/- 3761.36 [cm3] for daughters of ms
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 2 overlaps adding-up to 261.124 +/- 82.5745 [cm3] for daughters of BeamPipe
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 36 overlaps adding-up to 57.771 +/- 7.65195 [cm3] for daughters of stt01assembly
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 4 overlaps adding-up to 19.236 +/- 1.83408 [cm3] for daughters of Mvd-2.1o(Central-Mvd)

Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 166.789 +/- 5.21982 [cm3] for daughters of Mvd-2.1oSupport
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 10235 +/- 34.7595 [cm3] for daughters of Mvd-SupportoGlobalFwd
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.000116925 +/- 0.000116925 [cm3] for daughters of SupportoPbloConeo1oIIoaoii
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.00211537 +/- 0.00211537 [cm3] for daughters of Mvd-SupportoBl2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 502.4 +/- 4.19747 [cm3] for daughters of Mvd-2.1oComponents
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 816.014 +/- 4.80008 [cm3] for daughters of Mvd-ComponentsoConoElectronics
...

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by StefanoSpataro on Thu, 18 Jul 2013 13:13:58 GMT
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Hi Maria,
the macro is the correct one, which include ALL the panda detectors.

Some of the overlaps are know and not important, i.e. the ones in the solenoid; some others are negligible and will be fixed not in a short time, i.e. stt once there will be the full geometry including all the passive elements.

Others are known but not studied yet, i.e. the fsc one.

Others are new for me, i.e. the mvd ones. I will take a look.

Could you please copy the full log of the overlaps?

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by Maria Patsyuk on Thu, 18 Jul 2013 13:43:21 GMT
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Hi Stefano,

the full list of overlaps I can post tomorrow as the "CheckGeometryFull"-process takes hours. Is it ok?

Best regards,
Maria

Subject: Re: geometry overlaps for PANDA subdetectors

This is the list I obtain:

root [2] gGeoManager->PrintOverlaps()
=== Overlaps for FAIRGeom ===
 = Overlap ov00000: rich01gas extruded by: rich01gas/rich01mirror_0 ovlp=0.1084
 = Overlap ov00001: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_14 ovlp=2.36489
 = Overlap ov00002: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_15 ovlp=2.36489
 = Overlap ov00003: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_20 ovlp=2.36226
 = Overlap ov00004: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_21 ovlp=2.30958
 = Overlap ov00005: ms/md05_2 overlapping ms/md07_1 ovlp=1.86286
 = Overlap ov00006: ms/md05_3 overlapping ms/md07_2 ovlp=1.86286
 = Overlap ov00007: ms/md05_1 overlapping ms/md07_1 ovlp=1.86286
 = Overlap ov00008: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_9 ovlp=1.47
 = Overlap ov00009: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_8 ovlp=1.47
 = Overlap ov00010: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_13 ovlp=1.46991
 = Overlap ov00011: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_19 ovlp=1.46991
 = Overlap ov00012: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_26 ovlp=1.46964
 = Overlap ov00013: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_27 ovlp=1.46964
 = Overlap ov00014: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_16 ovlp=1.46919
 = Overlap ov00015: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_22 ovlp=1.46919
 = Overlap ov00016: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_7 ovlp=1.44823
 = Overlap ov00017: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_10 ovlp=1.44823
 = Overlap ov00018: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_25 ovlp=1.4456
 = Overlap ov00019: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_28 ovlp=1.39292
 = Overlap ov00020: cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_1/Cryostatov830o2_1/Supporto4oPartAss_1/Supporto4_1 overlapping cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s1l0b0w0_1 ovlp=0.846021
 = Overlap ov00021: cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_2/Cryostatov830o2_2/Supporto4oPartAss_2/Supporto4_2 overlapping cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s5l0b0w0_5 ovlp=0.846021

= Overlap ov00022:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_2/Cryostatov830o2_2/Supporto2oPartAss_2/Supporto2_2 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s5l0b0w0_5 ovlp=0.84602
= Overlap ov00023:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_1/Cryostatov830o2_1/Supporto2oPartAss_1/Supporto2_1 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s1l0b0w0_1 ovlp=0.84602
= Overlap ov00024:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_1/Cryostatov830o2_1/Supporto2oPartAss_1/Supporto2_1 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s0l0b0w0_0 ovlp=0.751859
= Overlap ov00025:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_2/Cryostatov830o2_2/Supporto2oPartAss_2/Supporto2_2 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s4l0b0w0_4 ovlp=0.600122
= Overlap ov00026:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_2/Cryostatov830o2_2/Supporto6oPartAss_2/Supporto6_2 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s6l0b0w0_6 ovlp=0.600122
= Overlap ov00027:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_1/Cryostatov830o2_1/Supporto6oPartAss_1/Supporto6_1 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s2l0b0w0_2 ovlp=0.600122
= Overlap ov00028:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_2/Cryostatov830o2_2/Supporto6oPartAss_2/Supporto6_2 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s3l0b0w0_3 ovlp=0.600121
= Overlap ov00029:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_1/Cryostatov830o2_1/Supporto6oPartAss_1/Supporto6_1 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s7l0b0w0_7 ovlp=0.600121
= Overlap ov00030:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_1/Cryostatov830o2_1/Supporto4oPartAss_1/Supporto4_1 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s2l0b0w0_2 ovlp=0.600121
= Overlap ov00031:
cave/FullSuperConductingSolenoidov831_0/SuperconductingSolenoidov831_2/Cryostatov830o2_2/Supporto4oPartAss_2/Supporto4_2 overlapping
cave/Mdt_1/MdtBarrel_1/MdtBarrelLayer00_1/MDT1s6l0b0w0_6 ovlp=0.600121
= Overlap ov00032: FscModuleVolume/FscTyvekVolume_0 overlapping
FscModuleVolume/FscFibHoleVolume_2 ovlp=0.553333
= Overlap ov00033: FscModuleVolume/FscTyvekVolume_0 overlapping
FscModuleVolume/FscFibHoleVolume_4 ovlp=0.553333
= Overlap ov00034: FscModuleVolume/FscTyvekVolume_0 overlapping
FscModuleVolume/FscFibHoleVolume_3 ovlp=0.553333
= Overlap ov00035: FscModuleVolume/FscTyvekVolume_0 overlapping
FscModuleVolume/FscFibHoleVolume_1 ovlp=0.553333
= Overlap ov00036: FscModuleVolume/FscTyvekVolume_0 overlapping
FscModuleVolume/FscFibHoleVolume_18 ovlp=0.553243
= Overlap ov00037: FscModuleVolume/FscTyvekVolume_0 overlapping
FscModuleVolume/FscFibHoleVolume_12 ovlp=0.553243

= Overlap ov00038: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_6 ovlp=0.553243
= Overlap ov00039: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_24 ovlp=0.553243
= Overlap ov00040: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_34 ovlp=0.552974
= Overlap ov00041: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_31 ovlp=0.552974
= Overlap ov00042: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_32 ovlp=0.552974
= Overlap ov00043: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_33 ovlp=0.552974
= Overlap ov00044: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_23 ovlp=0.552526
= Overlap ov00045: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_17 ovlp=0.552526
= Overlap ov00046: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_29 ovlp=0.552526
= Overlap ov00047: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_11 ovlp=0.552526
= Overlap ov00048: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_0 ovlp=0.531561
= Overlap ov00049: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_5 ovlp=0.531561
= Overlap ov00050: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_30 ovlp=0.528929
= Overlap ov00051: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_35 ovlp=0.476252
= Overlap ov00052: stt01assembly/stt01tube_1873 overlapping stt01assembly/stt01tube1924_0 ovlp=0.273734
= Overlap ov00053: stt01assembly/stt01tube_2099 overlapping stt01assembly/stt01tube2151_0 ovlp=0.27352
= Overlap ov00054: stt01assembly/stt01tube_1985 overlapping stt01assembly/stt01tube2036_0 ovlp=0.266989
= Overlap ov00055: stt01assembly/stt01tube_2214 overlapping stt01assembly/stt01tube2266_0 ovlp=0.266984
= Overlap ov00056: Mvd-2.1oSupport/Mvd-SupportoGlobalFrame_1/GsupoFrameoCylinderoXsoPartAss_1/GsupoFrameoCylinderoXs_1 overlapping Mvd-2.1oSupport/Mvd-SupportoSfwd_1/StripoFwdoSupportoRingoPartAss_2/StripoFwdoSupportoRing_1 ovlp=0.2
= Overlap ov00057: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Central_Strip14_14 ovlp=0.146051
= Overlap ov00058: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Central_Strip13_13 ovlp=0.146051
= Overlap ov00059: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Beam_Strip10_10 ovlp=0.109065
= Overlap ov00060: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Beam_Strip11_11 ovlp=0.109065
= Overlap ov00061: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Beam_Strip09_9 ovlp=0.109065

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by Maria Patsyuk on Fri, 19 Jul 2013 11:28:16 GMT
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That's the list of overlaps we got:

That's the list of overlaps we got:

```
l()
================================================================
STAGE 1: Overlap checking by sampling within 10 microns
================================================================
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within
0.001
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps by sampling <s> for cave and
daughters
Info in <TGeoNodeMatrix::CheckOverlaps>: === NOTE: Extrusions NOT checked with
sampling option ! ===
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 295.617
+/- 89.1317 [cm3] for daughters of
FullSuperConductingSolenoidov831
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 94.0598
+/- 35.5513 [cm3] for daughters of Cryostatov830o2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 14 overlaps adding-up to 265062
+/- 3735.49 [cm3] for daughters of ms
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 2 overlaps adding-up to 391.685
+/- 101.133 [cm3] for daughters of BeamPipe
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 39 overlaps adding-up to 57.771
+/- 7.65195 [cm3] for daughters of tt01assembly
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 4 overlaps adding-up to 20.1104
+/- 1.8753 [cm3] for daughters of Mvd-2.1o(Central-Mvd)
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 159.438
+/- 5.10349 [cm3] for daughters of Mvd-2.1oSupport
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 10229.6
+/- 34.7505 [cm3] for daughters of Mvd-SupportoGlobalFwd
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to
0.000251923 +/- 0.000251923 [cm3] for daughters of Mvd-SupportoBl1
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to
0.00211537 +/- 0.00211537 [cm3] for daughters of Mvd-SupportoBl2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 495.246
+/- 4.16748 [cm3] for daughters of Mvd-2.1oComponents
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 817.03
+/- 4.80307 [cm3] for daughters ofMvd-ComponentsoConoElectronics
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 501.66
+/- 3.61028 [cm3] for daughters of Mvd-ComponentsoMctrl
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 8.74501
+/- 1.06837 [cm3] for daughters of Mvd-2.1oRouting
```

Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.0364258 +/- 0.0364258 [cm3] for daughters of Mvd-RoutingoBl1oInsulation-Hv
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.046539 +/- 0.046539 [cm3] for daughters of Mvd-RoutingoBl2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 5.29099e-05 +/- 5.29099e-05 [cm3] for daughters of CableoInsulation-Feo3oIIoBundle
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 2 overlaps adding-up to 4.7643e-05 +/- 3.36887e-05 [cm3] for daughters of CoolingoInsulationo3oIIoBundle
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.0842489 +/- 0.0842489 [cm3] for daughters of Mvd-RoutingoBl4
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 276.38 +/- 5.72201 [cm3] for daughters of Mvd-RoutingoPfwd
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 16 overlaps adding-up to 30.5158 +/- 5.31211 [cm3] for daughters of Emc3
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 36 overlaps adding-up to 37.3468 +/- 0.281273 [cm3] for daughters of FscModuleVolume
Check overlaps: [==========] 2008078 [100.00 %] TIME 16:58:26
Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 128

==========
STAGE 2: Global overlap/extrusion checking within 10 microns
==========
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within 0.001
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
^C == 9% == [\ ] 42656 [2.12 %] TIME 04:26:26

Ours seem to be different from yours or?

Best regards,
Maria

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by StefanoSpataro on Tue, 23 Jul 2013 09:43:53 GMT
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Yes I see the same, I will start to investigate.

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by StefanoSpataro on Wed, 24 Jul 2013 13:54:36 GMT
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After some studies, I write here the list of overlaps I found:

MVD: Many internal overlaps, hopefully negligible. The geometry should be revised (?)

STT: Minor overlaps between the ends of some straws, this will be fixed in the STT version with all the passive elements.

EMC3: Many internal overlaps, the geometry should be revised (?)

FSC: Many internal overlaps, the geometry should be revised (?)

SOLENOID: Minor internal overlaps, negligile. Also overlap of support structure with MDT layer 0, negligile.

DIPOLE: Minor internal overlaps, revised (?)

RICH: The mirror is larger than the container box. Minor.

Between the previous overlaps, I believe the MVD, EMC3 and FSC should be fixed to be on the safe side.

ApaMoreover, there are other overlaps coming from the target+beam pipe:

PIPE: Internal overlaps in some valve and in the transition to dipole pipe.

FTOF: Overlaps in the hole region

EMC12: Overlaps in the hole region

STT: Overlaps between the two halves.

GEM: Overlaps in the hole region

I don't understand in particular the overlaps in the barrel spectrometer, the target pipe becomes larger than the space originally left and many detectors should be more separated... Quite strange. Not clear if the detector geometries should be modified or simply the pipe is too large. I know there is some more updated design of the pipe, I would wait for it before complaining officially.

I leave the word now to the detector experts...

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by Prometeusz Jasinski on Mon, 29 Jul 2013 09:26:45 GMT
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Hi, concerning the beam pipe:

I attached an updated version, but the beam pipe is even larger. I find internal overlaps even more interesting. How do I check those?

I wanted to wait for some decisions to be taken from the CAD integration side, like what happens to the pumps upstream of the dipole, but I'm afraid that we should insert simply the current beam pipe description. I see that many people realize that their detectors do not fit only from the detector description in pandaroot. Decisions about beam pipe enlargement are already approved by the technical board.

File Attachments
1) beampipe_201303.root, downloaded 505 times

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by StefanoSpataro on Tue, 30 Jul 2013 07:54:14 GMT
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Prometeusz Jasinski wrote on Mon, 29 July 2013 11:26Hi, concerning the beam pipe:

I attached an updated version, but the beam pipe is even larger. I find internal overlaps even more interesting. How do I check those?

I answer to your first question.
Run the simulation with few events. After, you open the simparams.root file, click on FairBaseParSet, and it will load the gGeoManager. From this you can:

gGeoManager->CheckGeometryFull();

or with the mouse you click in the FAIRGeom folder and run the same command. After you check overlaps, you can draw them from the "Overlaps" folder, or also print them ->PrintOverlaps(),

I do not suggest to include MVD geoemtry, since it takes almost 1 day to do the full check. The rest of PANDA is much much faster.

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by StefanoSpataro on Thu, 01 Aug 2013 07:14:50 GMT
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Hi,
I committed the geometry in svn, and launched the check of overlaps for ONLY the new beam pipe.

This is what I obtained:

```
========================================================================
STAGE 1: Overlap checking by sampling within 10 microns
========================================================================
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within
0.001
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps by sampling <s> for cave and
daughters
Info in <TGeoNodeMatrix::CheckOverlaps>: === NOTE: Extrusions NOT checked with
sampling option ! ===
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 2 overlaps adding-up to 3049.03
+/- 280.686 [cm3] for daughters of BeamPipe
Check overlaps:      [==========]   11 [100.00 %]   TIME 00:00:54
Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 2

========================================================================
STAGE 2: Global overlap/extrusion checking within 10 microns
========================================================================
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within
0.001
Check overlaps:      [==========]   11 [100.00 %]   TIME 00:00:00
Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 2

========================================================================
STAGE 3: Propagating 1000000 tracks starting from vertex
 and conting number of boundary crossings...
========================================================================
Transporting tracks  [==========] 1000000 [100.00 %]   TIME 00:00:06
Time for crossing 2050289 boundaries: 6.08e+06 [ms]
Time per track for full geometry traversal: 6.08 [ms], per crossing: 2.96544 [ms]
========================================================================
STAGE 4: How much navigation time per volume per next+safety call
========================================================================
Time for volume cave (assemb=0): 0.67 [ms] ndaughters=1 ncross=1024810
Time for volume BeamPipe (assemb=1): 0.82 [ms] ndaughters=9 ncross=1025479
Time for volume gvhesr (shape=VATvalve100): 0.43 [ms] ndaughters=0 ncross=239
Time for volume pipeup (shape=pipeup): 0.24 [ms] ndaughters=0 ncross=291
Time for volume ktmpump (shape=ktmpump): 0.6 [ms] ndaughters=0 ncross=983
Time for volume Tpump (shape=Tpumps): 1.46 [ms] ndaughters=0 ncross=2605
Time for volume pipeTSup (shape=pipeTSup): 0.25 [ms] ndaughters=0 ncross=16487
Time for volume Tcross (shape=Tcross): 1.62 [ms] ndaughters=0 ncross=997875
Time for volume pipeTSdown (shape=pipeTSdown): 0.25 [ms] ndaughters=0 ncross=2619
Time for volume crossTSTMPs (shape=crossTSTMPs): 2.57 [ms] ndaughters=0 ncross=4060
Time for volume DipolePip (shape=Dippip): 1.98 [ms] ndaughters=0 ncross=320
STAGE 4 completed    [=========/]   11 [ 91.67 %]
root [9] gGeoManager.PrintOverlaps()
=== Overlaps for FAIRGeom ===
 = Overlap ov00000: BeamPipe/gvhesr_0 overlapping BeamPipe/pipeup_0 ovlp=0.0825
 = Overlap ov00001: BeamPipe/crossTSTMPs_0 overlapping BeamPipe/DipolePip_0
ovlp=0.005
root [10]
```

Two internal overlaps are present, maybe some fixes are needed.

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by Prometeusz Jasinski on Thu, 01 Aug 2013 08:07:23 GMT
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I will try to resolve it.

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by Prometeusz Jasinski on Thu, 01 Aug 2013 10:11:17 GMT
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Ok, this geometry (without parts of the valves upstream of the dipole, since it was decided during beam pipe session we will try to omit those) should be ok.

There are some blank spaces. As soon as I know more mechanical details on the pipe, I can include it.

If it is ok, could you please commit this version?

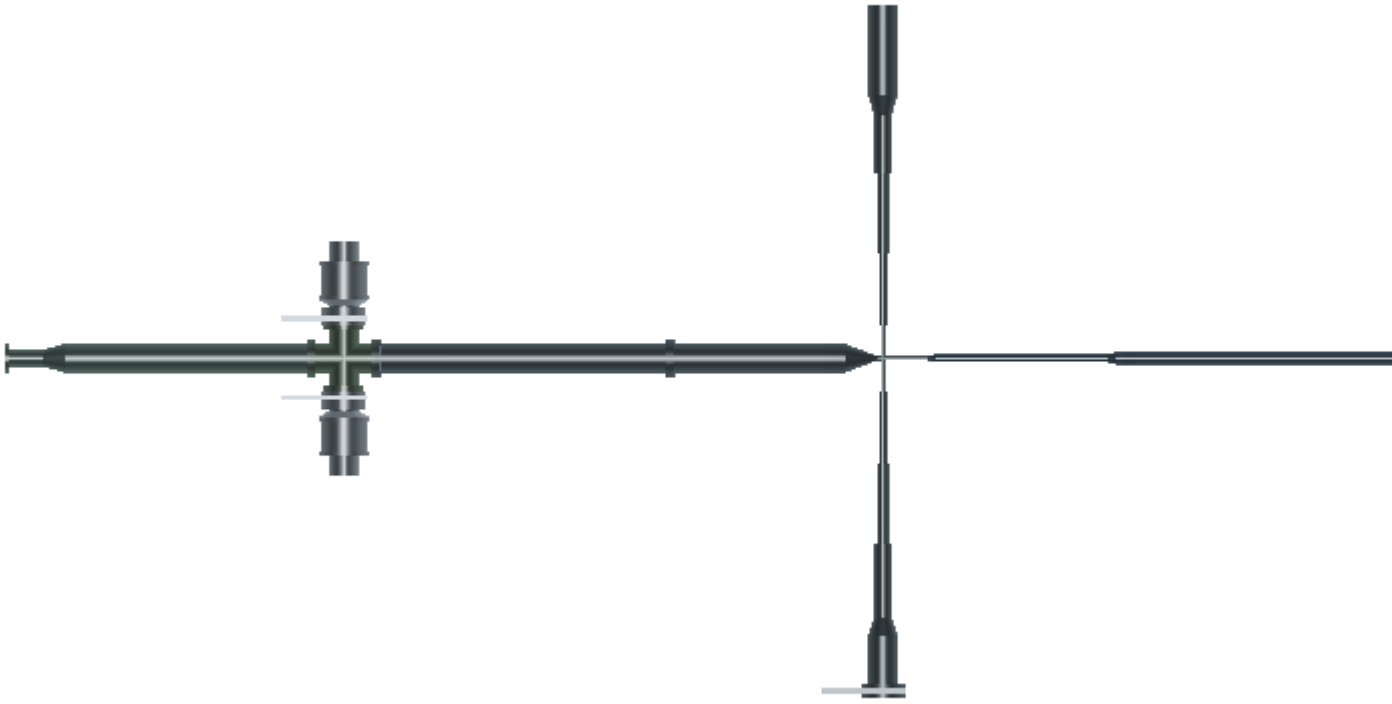
Cheers Promme

PS: Here is the output of the checks

Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for pipeassembly and daughters within 0.001
Check overlaps: [==========] 10 [100.00 %] TIME 00:00:00
Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 0

File Attachments

1) beampipe_201308.root, downloaded 428 times
2) viewer.png, downloaded 1153 times



Subject: Re: geometry overlaps for PANDA subdetectors
Posted by StefanoSpataro on Thu, 01 Aug 2013 13:44:24 GMT
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I have committed the last geometry and deleted the previous one. Now I can see no internal pipe overlaps, but I can see the overlaps with the other detectors. This is another issue...
I update the default macros, to use such geometry (macro/run/sim_complete.C).

As a trace, I copy here the list of overlaps I have w/ all the detectors BUT w/o MVD (MVD takes too long).

root [3] gGeoManager.PrintOverlaps()
=== Overlaps for FAIRGeom ===
 = Overlap ov00000: rich01gas extruded by: rich01gas/rich01mirror_0 ovlp=0.1084
 = Overlap ov00001: FscModuleVolume extruded by: FscModuleVolume/FscFibHoleVolume_0 ovlp=0.025
 = Overlap ov00002: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_14 ovlp=2.36489
 = Overlap ov00003: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_15 ovlp=2.36489
 = Overlap ov00004: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_20 ovlp=2.36226
 = Overlap ov00005: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_21 ovlp=2.30958
 = Overlap ov00006: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_8 ovlp=1.47

= Overlap ov00007: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_9 ovlp=1.47
= Overlap ov00008: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_19 ovlp=1.46991
= Overlap ov00009: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_13 ovlp=1.46991
= Overlap ov00010: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_26 ovlp=1.46964
= Overlap ov00011: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_27 ovlp=1.46964
= Overlap ov00012: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_16 ovlp=1.46919
= Overlap ov00013: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_22 ovlp=1.46919
= Overlap ov00014: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_7 ovlp=1.44823
= Overlap ov00015: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_10 ovlp=1.44823
= Overlap ov00016: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_25 ovlp=1.4456
= Overlap ov00017: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_28 ovlp=1.39292
= Overlap ov00018: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_2 ovlp=0.553333
= Overlap ov00019: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_1 ovlp=0.553333
= Overlap ov00020: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_3 ovlp=0.553333
= Overlap ov00021: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_4 ovlp=0.553333
= Overlap ov00022: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_6 ovlp=0.553243
= Overlap ov00023: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_12 ovlp=0.553243
= Overlap ov00024: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_18 ovlp=0.553243
= Overlap ov00025: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_24 ovlp=0.553243
= Overlap ov00026: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_33 ovlp=0.552974
= Overlap ov00027: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_34 ovlp=0.552974
= Overlap ov00028: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_31 ovlp=0.552974
= Overlap ov00029: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_32 ovlp=0.552974
= Overlap ov00030: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_29 ovlp=0.552526
= Overlap ov00031: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_11 ovlp=0.552526
= Overlap ov00032: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_23 ovlp=0.552526

= Overlap ov00033: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_17 ovlp=0.552526
= Overlap ov00034: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_0 ovlp=0.531561
= Overlap ov00035: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_5 ovlp=0.531561
= Overlap ov00036: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_30 ovlp=0.528929
= Overlap ov00037: FscModuleVolume/FscTyvekVolume_0 overlapping FscModuleVolume/FscFibHoleVolume_35 ovlp=0.476252
= Overlap ov00038: stt01assembly/stt01tube_1873 overlapping stt01assembly/stt01tube1924_0 ovlp=0.273734
= Overlap ov00039: stt01assembly/stt01tube_2099 overlapping stt01assembly/stt01tube2151_0 ovlp=0.27352
= Overlap ov00040: stt01assembly/stt01tube_1985 overlapping stt01assembly/stt01tube2036_0 ovlp=0.266989
= Overlap ov00041: stt01assembly/stt01tube_2214 overlapping stt01assembly/stt01tube2266_0 ovlp=0.266984
= Overlap ov00042: cave/BeamPipe_0/DipolePip_0 overlapping cave/fts03assembly_1/fts37tube_90 ovlp=0.249504
= Overlap ov00043: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Beam_Strip09_9 ovlp=0.14715
= Overlap ov00044: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Beam_Strip11_11 ovlp=0.14715
= Overlap ov00045: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Beam_Strip10_10 ovlp=0.14715
= Overlap ov00046: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Central_Strip8_8 ovlp=0.138157
= Overlap ov00047: Emc3/SubunitVolFwEndCap_434/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_28/AlveoleVol_halfsubunit_0 ovlp=0.073979
= Overlap ov00048: Emc3/SubunitVolFwEndCap_134/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_39/AlveoleVol_halfsubunit_0 ovlp=0.073979
= Overlap ov00049: Emc3/SubunitVolFwEndCap_234/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_45/AlveoleVol_halfsubunit_0 ovlp=0.073979
= Overlap ov00050: Emc3/SubunitVolFwEndCap_240/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_46/AlveoleVol_halfsubunit_0 ovlp=0.0724145
= Overlap ov00051: Emc3/SubunitVolFwEndCap_440/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_29/AlveoleVol_halfsubunit_0 ovlp=0.0724145
= Overlap ov00052: Emc3/SubunitVolFwEndCap_140/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_38/AlveoleVol_halfsubunit_0 ovlp=0.0724145
= Overlap ov00053: Emc3/HalfSubunitVolFwEndCap_5/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_25/AlveoleVol_halfsubunit_0 ovlp=0.072254
= Overlap ov00054: Emc3/HalfSubunitVolFwEndCap_10/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_42/AlveoleVol_halfsubunit_0 ovlp=0.072254
= Overlap ov00055: Emc3/SubunitVolFwEndCap_405/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_26/AlveoleVol_halfsubunit_0 ovlp=0.0702632
= Overlap ov00056: Emc3/SubunitVolFwEndCap_205/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_43/AlveoleVol_halfsubunit_0 ovlp=0.0702632
= Overlap ov00057: Emc3/SubunitVolFwEndCap_105/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_41/AlveoleVol_halfsubunit_0 ovlp=0.0702632
= Overlap ov00058: Emc3/SubunitVolFwEndCap_305/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_58/AlveoleVol_halfsubunit_0 ovlp=0.0702264

= Overlap ov00059: Emc3/SubunitVolFwEndCap_111/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_40/AlveoleVol_halfsubunit_0 ovlp=0.0695844
= Overlap ov00060: Emc3/SubunitVolFwEndCap_411/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_27/AlveoleVol_halfsubunit_0 ovlp=0.0695844
= Overlap ov00061: Emc3/SubunitVolFwEndCap_211/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_44/AlveoleVol_halfsubunit_0 ovlp=0.0695844
= Overlap ov00062: Emc3/SubunitVolFwEndCap_311/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_57/AlveoleVol_halfsubunit_0 ovlp=0.0695084
= Overlap ov00063: Emc3/SubunitVolFwEndCap_105/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_42/AlveoleVol_halfsubunit_0 ovlp=0.0677316
= Overlap ov00064: Emc3/SubunitVolFwEndCap_405/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_25/AlveoleVol_halfsubunit_0 ovlp=0.0677316
= Overlap ov00065: Emc3/SubunitVolFwEndCap_205/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_42/AlveoleVol_halfsubunit_0 ovlp=0.0677316
= Overlap ov00066: Emc3/SubunitVolFwEndCap_305/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_58/AlveoleVol_halfsubunit_0 ovlp=0.0654664
= Overlap ov00067: Emc3/SubunitVolFwEndCap_205/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_43/AlveoleVol_halfsubunit_0 ovlp=0.0654664
= Overlap ov00068: Emc3/SubunitVolFwEndCap_105/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_41/AlveoleVol_halfsubunit_0 ovlp=0.0654664
= Overlap ov00069: Emc3/SubunitVolFwEndCap_333/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_55/AlveoleVol_halfsubunit_0 ovlp=0.0638692
= Overlap ov00070: Emc3/SubunitVolFwEndCap_233/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_46/AlveoleVol_halfsubunit_0 ovlp=0.0638692
= Overlap ov00071: Emc3/SubunitVolFwEndCap_133/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_38/AlveoleVol_halfsubunit_0 ovlp=0.0638692
= Overlap ov00072: Emc3/SubunitVolFwEndCap_411/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_26/AlveoleVol_halfsubunit_0 ovlp=0.0605936
= Overlap ov00073: Emc3/SubunitVolFwEndCap_211/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_43/AlveoleVol_halfsubunit_0 ovlp=0.0605936
= Overlap ov00074: Emc3/SubunitVolFwEndCap_111/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_41/AlveoleVol_halfsubunit_0 ovlp=0.0605936
= Overlap ov00075: Emc3/SubunitVolFwEndCap_211/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_44/AlveoleVol_halfsubunit_0 ovlp=0.0593387
= Overlap ov00076: Emc3/SubunitVolFwEndCap_111/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_40/AlveoleVol_halfsubunit_0 ovlp=0.0593387
= Overlap ov00077: Emc3/SubunitVolFwEndCap_311/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_57/AlveoleVol_halfsubunit_0 ovlp=0.0593387
= Overlap ov00078: Emc3/SubunitVolFwEndCap_219/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_44/AlveoleVol_halfsubunit_0 ovlp=0.0549224
= Overlap ov00079: Emc3/SubunitVolFwEndCap_419/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_27/AlveoleVol_halfsubunit_0 ovlp=0.0549224
= Overlap ov00080: Emc3/SubunitVolFwEndCap_119/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_40/AlveoleVol_halfsubunit_0 ovlp=0.0549224
= Overlap ov00081: Emc3/SubunitVolFwEndCap_111/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_40/BoxVol_1 ovlp=0.0509067
= Overlap ov00082: Emc3/SubunitVolFwEndCap_411/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_27/BoxVol_1 ovlp=0.0509067
= Overlap ov00083: Emc3/SubunitVolFwEndCap_134/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_39/BoxVol_1 ovlp=0.0501728
= Overlap ov00084: Emc3/SubunitVolFwEndCap_434/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_28/BoxVol_1 ovlp=0.0501728

= Overlap ov00085: Emc3/SubunitVolFwEndCap_234/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_45/BoxVol_2 ovlp=0.0501728
= Overlap ov00086: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_9/EmcLayer2Hole_0/emc02r4c5_0 ovlp=0.049205
= Overlap ov00087: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_1/EmcLayer2Hole_0/emc02r4c5_0 ovlp=0.049205
= Overlap ov00088: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_9/EmcLayer2Hole_0/emc02r1c7_0 ovlp=0.0491724
= Overlap ov00089: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_1/EmcLayer2Hole_0/emc02r1c7_0 ovlp=0.0491724
= Overlap ov00090: Emc3/SubunitVolFwEndCap_134/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_39/AlveoleVol_halfsubunit_0 ovlp=0.0487848
= Overlap ov00091: Emc3/SubunitVolFwEndCap_234/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_45/AlveoleVol_halfsubunit_0 ovlp=0.0487848
= Overlap ov00092: Emc3/SubunitVolFwEndCap_434/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_28/AlveoleVol_halfsubunit_0 ovlp=0.0487848
= Overlap ov00093: Emc3/SubunitVolFwEndCap_105/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_41/BoxVol_1 ovlp=0.0487751
= Overlap ov00094: Emc3/SubunitVolFwEndCap_334/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_56/AlveoleVol_halfsubunit_0 ovlp=0.0486073
= Overlap ov00095: Emc3/SubunitVolFwEndCap_240/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_46/BoxVol_2 ovlp=0.0485797
= Overlap ov00096: Emc3/SubunitVolFwEndCap_140/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_38/BoxVol_1 ovlp=0.0485797
= Overlap ov00097: Emc3/SubunitVolFwEndCap_440/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_29/BoxVol_1 ovlp=0.0485797
= Overlap ov00098: Emc3/HalfSubunitVolFwEndCap_10/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_42/BoxVol_1 ovlp=0.04824
= Overlap ov00099: Emc3/HalfSubunitVolFwEndCap_5/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_25/BoxVol_2 ovlp=0.0479261
= Overlap ov00100: Emc3/HalfSubunitVolFwEndCap_10/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_42/BoxVol_2 ovlp=0.0479261
= Overlap ov00101: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01box_2 ovlp=0.047887
= Overlap ov00102: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01box_3 ovlp=0.047887
= Overlap ov00103: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_1/EmcLayer2Hole_0/emc02r2c7_0 ovlp=0.0464446
= Overlap ov00104: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_9/EmcLayer2Hole_0/emc02r2c7_0 ovlp=0.0464446
= Overlap ov00105: Emc3/SubunitVolFwEndCap_305/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_58/BoxVol_2 ovlp=0.0459602
= Overlap ov00106: Emc3/SubunitVolFwEndCap_205/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_43/BoxVol_2 ovlp=0.0459602
= Overlap ov00107: Emc3/SubunitVolFwEndCap_105/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_41/BoxVol_2 ovlp=0.0458743
= Overlap ov00108: Emc3/SubunitVolFwEndCap_405/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_26/BoxVol_2 ovlp=0.0458743
= Overlap ov00109: Emc3/SubunitVolFwEndCap_205/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_43/BoxVol_1 ovlp=0.0458743
= Overlap ov00110: stt01assembly/stt01outerCylinder_1 overlapping stt01assembly/stt01box_1 ovlp=0.0456831

= Overlap ov00111: Emc3/SubunitVolFwEndCap_311/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_57/BoxVol_2 ovlp=0.0453087
= Overlap ov00112: Emc3/SubunitVolFwEndCap_211/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_44/BoxVol_2 ovlp=0.0453087
= Overlap ov00113: Emc3/SubunitVolFwEndCap_411/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_27/BoxVol_2 ovlp=0.0451314
= Overlap ov00114: Emc3/SubunitVolFwEndCap_111/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_40/BoxVol_2 ovlp=0.0451314
= Overlap ov00115: Emc3/SubunitVolFwEndCap_211/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_44/BoxVol_1 ovlp=0.0451314
= Overlap ov00116: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_1/EmcLayer2Hole_0/emc02r3c7_0 ovlp=0.0450102
= Overlap ov00117: cave/BeamPipe_0/Tcross_0 overlapping cave/Emc12Hole_9/EmcLayer2Hole_0/emc02r3c7_0 ovlp=0.0450102
= Overlap ov00118: Emc3/SubunitVolFwEndCap_126/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_39/AlveoleVol_halfsubunit_0 ovlp=0.0449412
= Overlap ov00119: Emc3/SubunitVolFwEndCap_226/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_45/AlveoleVol_halfsubunit_0 ovlp=0.0449412
= Overlap ov00120: Emc3/SubunitVolFwEndCap_326/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_56/AlveoleVol_halfsubunit_0 ovlp=0.0449412
= Overlap ov00121: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01box_1 ovlp=0.0447398
= Overlap ov00122: Emc3/SubunitVolFwEndCap_105/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_42/BoxVol_1 ovlp=0.0440472
= Overlap ov00123: Emc3/SubunitVolFwEndCap_205/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_42/BoxVol_2 ovlp=0.0440472
= Overlap ov00124: Emc3/SubunitVolFwEndCap_405/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_25/BoxVol_1 ovlp=0.0440472
= Overlap ov00125: Emc3/SubunitVolFwEndCap_205/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_43/BoxVol_1 ovlp=0.0436612
= Overlap ov00126: Emc3/SubunitVolFwEndCap_305/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_58/BoxVol_1 ovlp=0.0436612
= Overlap ov00127: Emc3/SubunitVolFwEndCap_140/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_38/AlveoleVol_halfsubunit_0 ovlp=0.0420361
= Overlap ov00128: Emc3/SubunitVolFwEndCap_440/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_29/AlveoleVol_halfsubunit_0 ovlp=0.0420361
= Overlap ov00129: Emc3/SubunitVolFwEndCap_240/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_46/AlveoleVol_halfsubunit_0 ovlp=0.0420361
= Overlap ov00130: Emc3/SubunitVolFwEndCap_340/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_55/AlveoleVol_halfsubunit_0 ovlp=0.0418211
= Overlap ov00131: Emc3/SubunitVolFwEndCap_105/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_41/BoxVol_2 ovlp=0.0418111
= Overlap ov00132: Emc3/SubunitVolFwEndCap_211/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_44/BoxVol_1 ovlp=0.0403207
= Overlap ov00133: Emc3/SubunitVolFwEndCap_133/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_38/BoxVol_2 ovlp=0.0403166
= Overlap ov00134: Emc3/SubunitVolFwEndCap_233/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_46/BoxVol_1 ovlp=0.0403166
= Overlap ov00135: Emc3/SubunitVolFwEndCap_333/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_55/BoxVol_1 ovlp=0.0403166
= Overlap ov00136: Emc3/SubunitVolFwEndCap_311/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_57/BoxVol_1 ovlp=0.0402109

= Overlap ov00137: cave/BeamPipe_0/DipolePip_0 overlapping cave/fts03assembly_1/fts31tube_295 ovlp=0.0390577
= Overlap ov00138: Emc3/SubunitVolFwEndCap_211/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_43/BoxVol_2 ovlp=0.0368826
= Overlap ov00139: Emc3/SubunitVolFwEndCap_411/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_26/BoxVol_1 ovlp=0.0368826
= Overlap ov00140: Emc3/SubunitVolFwEndCap_111/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_41/BoxVol_1 ovlp=0.0368826
= Overlap ov00141: Emc3/SubunitVolFwEndCap_111/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_40/BoxVol_2 ovlp=0.0357086
= Overlap ov00142: stt01assembly/stt01tube_2542 overlapping stt01assembly/stt01tube2570_0 ovlp=0.0334194
= Overlap ov00143: stt01assembly/stt01tube_2663 overlapping stt01assembly/stt01tube2691_0 ovlp=0.0334194
= Overlap ov00144: stt01assembly/stt01tube_2305 overlapping stt01assembly/stt01tube2332_0 ovlp=0.0320374
= Overlap ov00145: stt01assembly/stt01tube_2423 overlapping stt01assembly/stt01tube2450_0 ovlp=0.0320374
= Overlap ov00146: stt01assembly/stt01tube_2706 overlapping stt01assembly/stt01tube2732_0 ovlp=0.0318431
= Overlap ov00147: stt01assembly/stt01tube_2585 overlapping stt01assembly/stt01tube2611_0 ovlp=0.0318412
= Overlap ov00148: Emc3/SubunitVolFwEndCap_419/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_27/BoxVol_1 ovlp=0.0311839
= Overlap ov00149: Emc3/SubunitVolFwEndCap_219/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_44/BoxVol_2 ovlp=0.0311839
= Overlap ov00150: Emc3/SubunitVolFwEndCap_119/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_40/BoxVol_1 ovlp=0.0311839
= Overlap ov00151: stt01assembly/stt01tube_2190 overlapping stt01assembly/stt01tube2216_0 ovlp=0.0306549
= Overlap ov00152: stt01assembly/stt01tube_2075 overlapping stt01assembly/stt01tube2101_0 ovlp=0.0306549
= Overlap ov00153: stt01assembly/stt01tube_2465 overlapping stt01assembly/stt01tube2490_0 ovlp=0.0304593
= Overlap ov00154: stt01assembly/stt01tube_2347 overlapping stt01assembly/stt01tube2372_0 ovlp=0.0304574
= Overlap ov00155: stt01assembly/stt01tube_1962 overlapping stt01assembly/stt01tube1987_0 ovlp=0.0292729
= Overlap ov00156: stt01assembly/stt01tube_1850 overlapping stt01assembly/stt01tube1875_0 ovlp=0.0292729
= Overlap ov00157: stt01assembly/stt01tube_2624 overlapping stt01assembly/stt01tube2650_0 ovlp=0.0282992
= Overlap ov00158: stt01assembly/stt01tube_2503 overlapping stt01assembly/stt01tube2529_0 ovlp=0.0282973
= Overlap ov00159: stt01assembly/stt01tube_2114 overlapping stt01assembly/stt01tube2137_0 ovlp=0.0276908
= Overlap ov00160: stt01assembly/stt01tube_2229 overlapping stt01assembly/stt01tube2252_0 ovlp=0.0276908
= Overlap ov00161: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Central_Strip14_14 ovlp=0.0272523
= Overlap ov00162: cave/BeamPipe_0/DipolePip_0 overlapping cave/Ftof_strips_0/Ftof_Central_Strip13_13 ovlp=0.0272523

= Overlap ov00163: stt01assembly/stt01tube_2385 overlapping stt01assembly/stt01tube2410_0 ovlp=0.0269206
= Overlap ov00164: stt01assembly/stt01tube_2267 overlapping stt01assembly/stt01tube2292_0 ovlp=0.0269187
= Overlap ov00165: stt01assembly/stt01tube_1741 overlapping stt01assembly/stt01tube1764_0 ovlp=0.0265086
= Overlap ov00166: stt01assembly/stt01tube_1635 overlapping stt01assembly/stt01tube1658_0 ovlp=0.0265086
= Overlap ov00167: stt01assembly/stt01tube_1888 overlapping stt01assembly/stt01tube1910_0 ovlp=0.0263069
= Overlap ov00168: stt01assembly/stt01tube_2000 overlapping stt01assembly/stt01tube2022_0 ovlp=0.0263069
= Overlap ov00169: Emc3/SubunitVolFwEndCap_134/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_39/BoxVol_1 ovlp=0.0251848
= Overlap ov00170: stt01assembly/stt01tube_1531 overlapping stt01assembly/stt01tube1553_0 ovlp=0.0251265
= Overlap ov00171: stt01assembly/stt01tube_1428 overlapping stt01assembly/stt01tube1450_0 ovlp=0.0251265
= Overlap ov00172: stt01assembly/stt01tube_1779 overlapping stt01assembly/stt01tube1800_0 ovlp=0.0249233
= Overlap ov00173: stt01assembly/stt01tube_1673 overlapping stt01assembly/stt01tube1694_0 ovlp=0.0249214
= Overlap ov00174: Emc3/SubunitVolFwEndCap_234/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_45/BoxVol_2 ovlp=0.0245832
= Overlap ov00175: Emc3/SubunitVolFwEndCap_334/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_56/BoxVol_2 ovlp=0.0245832
= Overlap ov00176: Emc3/SubunitVolFwEndCap_434/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_28/BoxVol_2 ovlp=0.0241691
= Overlap ov00177: Emc3/SubunitVolFwEndCap_134/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_39/BoxVol_2 ovlp=0.0241691
= Overlap ov00178: Emc3/SubunitVolFwEndCap_234/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_45/BoxVol_1 ovlp=0.0241691
= Overlap ov00179: stt01assembly/stt01tube_2037 overlapping stt01assembly/stt01tube2060_0 ovlp=0.0241626
= Overlap ov00180: stt01assembly/stt01tube_2152 overlapping stt01assembly/stt01tube2175_0 ovlp=0.0241626
= Overlap ov00181: stt01assembly/stt01tube_1328 overlapping stt01assembly/stt01tube1349_0 ovlp=0.0237442
= Overlap ov00182: stt01assembly/stt01tube_1228 overlapping stt01assembly/stt01tube1249_0 ovlp=0.0237442
= Overlap ov00183: stt01assembly/stt01tube_1568 overlapping stt01assembly/stt01tube1588_0 ovlp=0.0235393
= Overlap ov00184: stt01assembly/stt01tube_1465 overlapping stt01assembly/stt01tube1485_0 ovlp=0.0235374
= Overlap ov00185: stt01assembly/stt01tube_1813 overlapping stt01assembly/stt01tube1835_0 ovlp=0.0227838
= Overlap ov00186: stt01assembly/stt01tube_1925 overlapping stt01assembly/stt01tube1947_0 ovlp=0.0227838
= Overlap ov00187: stt01assembly/stt01tube_1130 overlapping stt01assembly/stt01tube1150_0 ovlp=0.022362
= Overlap ov00188: stt01assembly/stt01tube_1033 overlapping stt01assembly/stt01tube1053_0 ovlp=0.022362

= Overlap ov00189: stt01assembly/stt01tube_1707 overlapping stt01assembly/stt01tube1728_0 ovlp=0.0214055
= Overlap ov00190: stt01assembly/stt01tube_1601 overlapping stt01assembly/stt01tube1622_0 ovlp=0.0214036
= Overlap ov00191: Emc3/SubunitVolFwEndCap_326/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_56/BoxVol_1 ovlp=0.0209979
= Overlap ov00192: Emc3/SubunitVolFwEndCap_226/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_45/BoxVol_1 ovlp=0.0209979
= Overlap ov00193: Emc3/SubunitVolFwEndCap_126/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_39/BoxVol_2 ovlp=0.0209979
= Overlap ov00194: stt01assembly/stt01tube_1262 overlapping stt01assembly/stt01tube1280_0 ovlp=0.0207708
= Overlap ov00195: stt01assembly/stt01tube_1362 overlapping stt01assembly/stt01tube1380_0 ovlp=0.0207708
= Overlap ov00196: stt01assembly/stt01tube_1498 overlapping stt01assembly/stt01tube1518_0 ovlp=0.0200266
= Overlap ov00197: stt01assembly/stt01tube_1395 overlapping stt01assembly/stt01tube1415_0 ovlp=0.0200247
= Overlap ov00198: stt01assembly/stt01tube_1066 overlapping stt01assembly/stt01tube1083_0 ovlp=0.0193869
= Overlap ov00199: stt01assembly/stt01tube_1163 overlapping stt01assembly/stt01tube1180_0 ovlp=0.0193869
= Overlap ov00200: Emc3/SubunitVolFwEndCap_140/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_38/BoxVol_1 ovlp=0.0185884
= Overlap ov00201: Emc3/SubunitVolFwEndCap_340/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_55/BoxVol_2 ovlp=0.0178632
= Overlap ov00202: Emc3/SubunitVolFwEndCap_240/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_46/BoxVol_2 ovlp=0.0178632
= Overlap ov00203: Emc3/SubunitVolFwEndCap_240/BoxVol_1 overlapping Emc3/HalfSubunitVolFwEndCap_46/BoxVol_1 ovlp=0.0173616
= Overlap ov00204: Emc3/SubunitVolFwEndCap_440/BoxVol_2 overlapping Emc3/HalfSubunitVolFwEndCap_29/BoxVol_2 ovlp=0.0173616
= Overlap ov00205: Emc3/SubunitVolFwEndCap_140/BoxVol_3 overlapping Emc3/HalfSubunitVolFwEndCap_38/BoxVol_2 ovlp=0.0173616
= Overlap ov00206: stt01assembly/stt01tube_1195 overlapping stt01assembly/stt01tube1213_0 ovlp=0.0172684
= Overlap ov00207: stt01assembly/stt01tube_1295 overlapping stt01assembly/stt01tube1313_0 ovlp=0.0172684
= Overlap ov00208: stt01assembly/stt01tube_1001 overlapping stt01assembly/stt01tube1018_0 ovlp=0.0158895
= Overlap ov00209: stt01assembly/stt01tube_1098 overlapping stt01assembly/stt01tube1115_0 ovlp=0.0158895
= Overlap ov00210: Emc3/SubunitVolFwEndCap_405/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_26/BoxVol_1 ovlp=0.0142737
= Overlap ov00211: Emc3/SubunitVolFwEndCap_334/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_56/BoxVol_1 ovlp=0.0121789
= Overlap ov00212: stt01assembly/stt01tube2410_0 overlapping stt01assembly/stt01tube_2624 ovlp=0.0117254
= Overlap ov00213: stt01assembly/stt01tube2292_0 overlapping stt01assembly/stt01tube_2503 ovlp=0.0117253
= Overlap ov00214: stt01assembly/stt01tube2332_0 overlapping stt01assembly/stt01tube_2542 ovlp=0.010436

= Overlap ov00215: stt01assembly/stt01tube2450_0 overlapping stt01assembly/stt01tube_2663 ovlp=0.010436
= Overlap ov00216: stt01assembly/stt01tube1947_0 overlapping stt01assembly/stt01tube_2152 ovlp=0.00992221
= Overlap ov00217: stt01assembly/stt01tube1835_0 overlapping stt01assembly/stt01tube_2037 ovlp=0.00992071
= Overlap ov00218: Emc3/SubunitVolFwEndCap_140/AlveoleVol_subunit_0 overlapping Emc3/HalfSubunitVolFwEndCap_38/BoxVol_1 ovlp=0.00985257
= Overlap ov00219: stt01assembly/stt01tube2372_0 overlapping stt01assembly/stt01tube_2585 ovlp=0.00953153
= Overlap ov00220: stt01assembly/stt01tube2490_0 overlapping stt01assembly/stt01tube_2706 ovlp=0.00953153
= Overlap ov00221: stt01assembly/stt01outerCylinder_2 overlapping stt01assembly/stt01box_2 ovlp=0.00905095
= Overlap ov00222: stt01assembly/stt01outerCylinder_1 overlapping stt01assembly/stt01box_3 ovlp=0.00905095
= Overlap ov00223: stt01assembly/stt01outerCylinder_2 overlapping stt01assembly/stt01box_4 ovlp=0.00905095
= Overlap ov00224: cave/BeamPipe_0/pipeTSdown_0 overlapping cave/Gem_Disks_0/Gem_Disk1_Volume_0 ovlp=0.00901905
= Overlap ov00225: stt01assembly/stt01tube1875_0 overlapping stt01assembly/stt01tube_2075 ovlp=0.00891698
= Overlap ov00226: stt01assembly/stt01tube1987_0 overlapping stt01assembly/stt01tube_2190 ovlp=0.00891698
= Overlap ov00227: stt01assembly/stt01tube1518_0 overlapping stt01assembly/stt01tube_1707 ovlp=0.00870523
= Overlap ov00228: stt01assembly/stt01tube1415_0 overlapping stt01assembly/stt01tube_1601 ovlp=0.00870518
= Overlap ov00229: stt01assembly/stt01tube1910_0 overlapping stt01assembly/stt01tube_2114 ovlp=0.00785795
= Overlap ov00230: stt01assembly/stt01tube2022_0 overlapping stt01assembly/stt01tube_2229 ovlp=0.00785785
= Overlap ov00231: stt01assembly/stt01tube1115_0 overlapping stt01assembly/stt01tube_1295 ovlp=0.00685506
= Overlap ov00232: stt01assembly/stt01tube1018_0 overlapping stt01assembly/stt01tube_1195 ovlp=0.00685353
= Overlap ov00233: stt01assembly/stt01tube1485_0 overlapping stt01assembly/stt01tube_1673 ovlp=0.0067259
= Overlap ov00234: stt01assembly/stt01tube1588_0 overlapping stt01assembly/stt01tube_1779 ovlp=0.0067259
= Overlap ov00235: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01tube2070_0 ovlp=0.00672061
= Overlap ov00236: stt01assembly/stt01tube1450_0 overlapping stt01assembly/stt01tube_1635 ovlp=0.00661876
= Overlap ov00237: stt01assembly/stt01tube1553_0 overlapping stt01assembly/stt01tube_1741 ovlp=0.00661876
= Overlap ov00238: stt01assembly/stt01tube1053_0 overlapping stt01assembly/stt01tube_1228 ovlp=0.00507301
= Overlap ov00239: stt01assembly/stt01tube1150_0 overlapping stt01assembly/stt01tube_1328 ovlp=0.00507301
= Overlap ov00240: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01tube1845_0 ovlp=0.00501348

= Overlap ov00241: stt01assembly/stt01tube1083_0 overlapping stt01assembly/stt01tube_1262 ovlp=0.00500404
= Overlap ov00242: stt01assembly/stt01tube1180_0 overlapping stt01assembly/stt01tube_1362 ovlp=0.00500392
= Overlap ov00243: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01tube2185_0 ovlp=0.003921
= Overlap ov00244: Emc3/SubunitVolFwEndCap_340/BoxVol_4 overlapping Emc3/HalfSubunitVolFwEndCap_55/BoxVol_1 ovlp=0.00276907
= Overlap ov00245: cave/BeamPipe_0/Tcross_0 overlapping cave/stt01assembly_0/stt01tube1957_0 ovlp=0.00220847

Subject: Re: geometry overlaps for PANDA subdetectors
Posted by Prometeusz Jasinski on Thu, 01 Aug 2013 18:23:08 GMT
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Thank you for your effords.
