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Subject: MVD geometry overlaps

Posted by [Stefano Spataro](#) on Wed, 24 Jul 2013 11:12:49 GMT

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Dear all,

triggered by some forum discussion, I checked the MVD geometry searching for overlaps.  
This is what I obtained:

```
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 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 176.101 +/- 5.36354 [cm3] for daughters of Mvd-2.1oSupport
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 10213.2 +/- 34.7226 [cm3] for daughters of Mvd-SupportoGlobalFwd
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 498.788 +/- 4.18235 [cm3] for daughters of Mvd-2.1oComponents
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 818.668 +/- 4.80788 [cm3] for daughters of Mvd-ComponentsoConoElectronics
```

```
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 367.446 +/- 3.13564 [cm3] for daughters of Mvd-ComponentsoSmd
```

```
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 6.65665 +/- 0.932117 [cm3] for daughters of Mvd-2.1oRouting
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.0399197 +/- 0.0399197 [cm3] for daughters of Mvd-RoutingoBI1
```

```
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 0.00015873 +/- 9.16426e-05 [cm3] for daughters of CableoInsulation-Feo3olloBundle
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 3 overlaps adding-up to 9.5286e-05 +/- 4.7643e-05 [cm3] for daughters of CoolingoInsulationo3olloBundle
```

```
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 274.958 +/- 5.70728 [cm3] for daughters of Mvd-RoutingoPfw
```

```
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.110866 +/- 0.110866 [cm3] for daughters of Mvd-RoutingoSfw
```

```
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
```

```
Check overlaps: [=====] 111257 [100.00 %] TIME 22:49:41
```

Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 17

=====  
STAGE 2: Global overlap/extrusion checking within 10 microns  
=====

Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within 0.001

Check overlaps: [=====] 111257 [100.00 %] TIME 05:15:14

Info in <TGeoNodeMatrix::CheckOverlaps>: Number of illegal overlaps/extrusions : 270

=====  
STAGE 3: Propagating 1000000 tracks starting from vertex  
and counting number of boundary crossings...  
=====

Error in trying to cross boundary of cave\_1 98.99 %] TIME 00:50:20

Transporting tracks [=====] 1000000 [100.00 %] TIME 00:50:50

Time for crossing 57613394 boundaries: 3.05043e+09 [ms]

Time per track for full geometry traversal: 3050.43 [ms], per crossing: 52.9465 [ms]  
=====

I supposed the MVD default geometry (Mvd-2.1\_FullVersion.root) should be overlap-free, but this is not the case.

Are these overlaps understood and negligible, or maybe there is some better geometry to use?

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