

# MAUS - Bug #1962

## No delta electrons when using gdml

23 March 2018 18:23 - Rogers, Chris

<b>Status:</b>	Closed	<b>Start date:</b>	23 March 2018
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>	Rogers, Chris	<b>% Done:</b>	100%
<b>Category:</b>	Simulation	<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	Future MAUS release		
<b>Workflow:</b>	New Issue		
<b>Description</b>			
When doing tracking using the gdml geometry, no delta electrons are produced. This is not the case when doing tracking using MiceModules geometry.			

### History

#### #1 - 23 March 2018 18:32 - Rogers, Chris

I am running two geometries; both are 2 mm thick plastic disks, one defined in gdml and the other using MiceModules. I get a nice distribution of secondary electrons with the MiceModules, but nothing with the gdml. A few observations:

1. The code at src/common\_cpp/Simulation/MAUSGeant4Manager.hh,cc does not set the user limits correctly. The SetVolumeInformation function doesn't work. I fixed this, and manually set the Min Kinetic Energy to be low (1 keV). Still no deltas
2. The ProductionThreshold is set to be "very high" during the cavity phasing part of the G4 setup - see Simulation/MAUSPhysicsList.hh,cc. I can't see at the moment how it is set back to something sensible. Presumably it is somewhere...

Continuing to dig.

#### #2 - 23 March 2018 18:41 - Rogers, Chris

This patch seems to have fixed things:

```
=== modified file 'src/common_cpp/Simulation/MAUSPhysicsList.cc'
--- src/common_cpp/Simulation/MAUSPhysicsList.cc      2016-08-31 11:59:03 +0000
+++ src/common_cpp/Simulation/MAUSPhysicsList.cc      2018-03-23 18:32:42 +0000
@@ -181,8 +181,7 @@
     break;
 }
 std::vector<std::string> uiCommand;
- if (eLossModel != energyStragglings)
-   uiCommand.push_back("/run/setCut "+STLUtills::ToString(cutDouble));
+ uiCommand.push_back("/run/setCut "+STLUtills::ToString(cutDouble));
 uiCommand.push_back("/process/eLoss/fluct "+flucActive);
 for (int i = 0; i < _nELossNames; i++)
   uiCommand.push_back("/process/"+elossActive+" "+_eLossNames[i]);
```

#### #3 - 26 March 2018 10:54 - Rogers, Chris

This is the patch to get proper propagation of user limits

```
=== modified file 'src/common_cpp/Simulation/MAUSGeant4Manager.cc'
--- src/common_cpp/Simulation/MAUSGeant4Manager.cc    2016-08-31 11:59:03 +0000
+++ src/common_cpp/Simulation/MAUSGeant4Manager.cc    2018-03-26 08:44:54 +0000
@@ -240,7 +240,8 @@
 }

 void MAUSGeant4Manager::SetVolumeInformation(MiceModule& module, G4LogicalVolume* base) {
-
+ G4UserLimits* limits = new G4UserLimits(_stepMax, _trackMax, _timeMax, _keThreshold);
+ base->SetUserLimits(limits);
   // G4VPhysicalVolume* world = _parser.GetWorldVolume();
   G4int nDaughters = base->GetNoDaughters();
   for (int i = 0; i < nDaughters; i++) {
@@ -255,15 +256,8 @@
     // Set auxiliary information
     SetAuxInformation(module, myvol, auxlist);
   }
- // else {
```

```
- //      _detector->GetUserLimits().push_back(new G4UserLimits(_stepMax, _trackMax,  
- //      _timeMax, _keThreshold));  
- //      myvol->SetUserLimits(_detector->GetUserLimits().back());  
- //      }  
- if ( myvol->GetNoDaughters() > 0 ) {  
-     // Consider adding information to the daughter volumes  
-     SetVolumeInformation(module, myvol);  
- }  
+ // Consider adding information to the daughter volumes  
+ SetVolumeInformation(module, myvol);  
}  
}
```

#### **#4 - 10 May 2018 16:11 - Rogers, Chris**

- *Status changed from Open to Closed*

- *% Done changed from 0 to 100*

Fixed in r739