WG 5.2.1 Meeting Simulation - Phase-I

November 10th 2022 Marco Leite (USP)

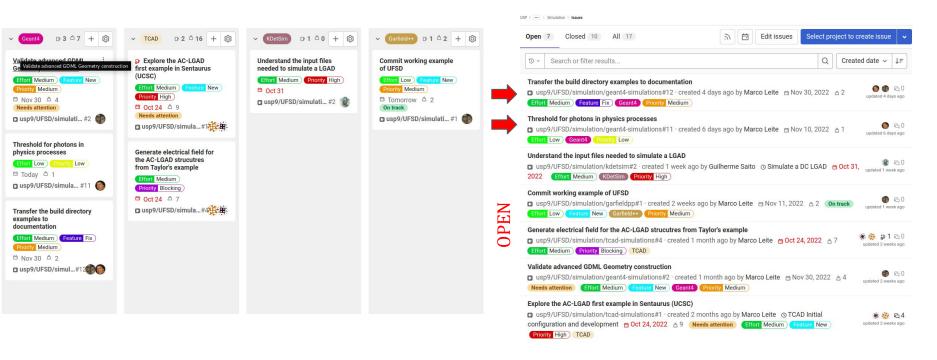
WG 5.2.1 Simulation Phase-I

Minutes from Nov. 3rd. 2022 meeting



WG 5.2.1 Simulation Phase-I - Gitlab Issues

Project issues in Gitlab as of Today (27/10/2022)



WG 5.2.1 Simulation Phase-I - Beam Information

Added Beam information to ntuple (filled in LGAD_02SensitiveDetector.cc)

```
109
     // Get the address of the ROOT TTree branches //
110
111
     112
     G4int *beam particle
                                = HistMan->GetBeamParticle();
     std::vector<G4double>* beam origin = HistMan->GetBeamOrigin();
113
114
     std::vector<G4double>* beam p4 = HistMan->GetBeamP4();
115
116
     117
     // Persist the information //
     118
119
     *beam particle = beam PDG ;
     *beam origin = {pos.x(), pos.y(), pos.z()};
120
121
     *beam p4 = \{mom.x(), mom.y(), mom.z(), beam energy\};
122
123
     En->emplace back(Energy);
124
     HistMan->FillNtuple();
         Energy = 0.0;
125
126 }
127
```

WG 5.2.1 Simulation Phase-I - Charge Transport

- Would be important to have the E field calculated by TCAD to import to Garfield++ and other ad-hoc simulators
- Can I have a file to test with Garfield++?

4.2.2. Synopsys TCAD

Electric fields calculated using the device simulation program Synopsys Sentaurus [46] can be imported with the classes ComponentTcad2d and ComponentTcad3d (derived from the base class ComponentTcadBase).

The function to import the field map is

```
bool Initialise(const std::string& gridfilename,
const std::string& datafilename);
```

gridfilename name of the mesh file, the extension is typically .grd

datafilename name of the file containing the nodal solution; the filename typically typically ends with _des.dat

Both files have to be exported in DF-ISE format, files in the default TDR format cannot be read. To convert a TDR file to _.dat and .grd files, the Sentaurus tool tdx can be used

tdx -dd fieldToConvert.tdr

WG 5.2.1 Simulation Phase-I - Charge Transport

