WG 5.2.1 Meeting
Simulation - Phase-I

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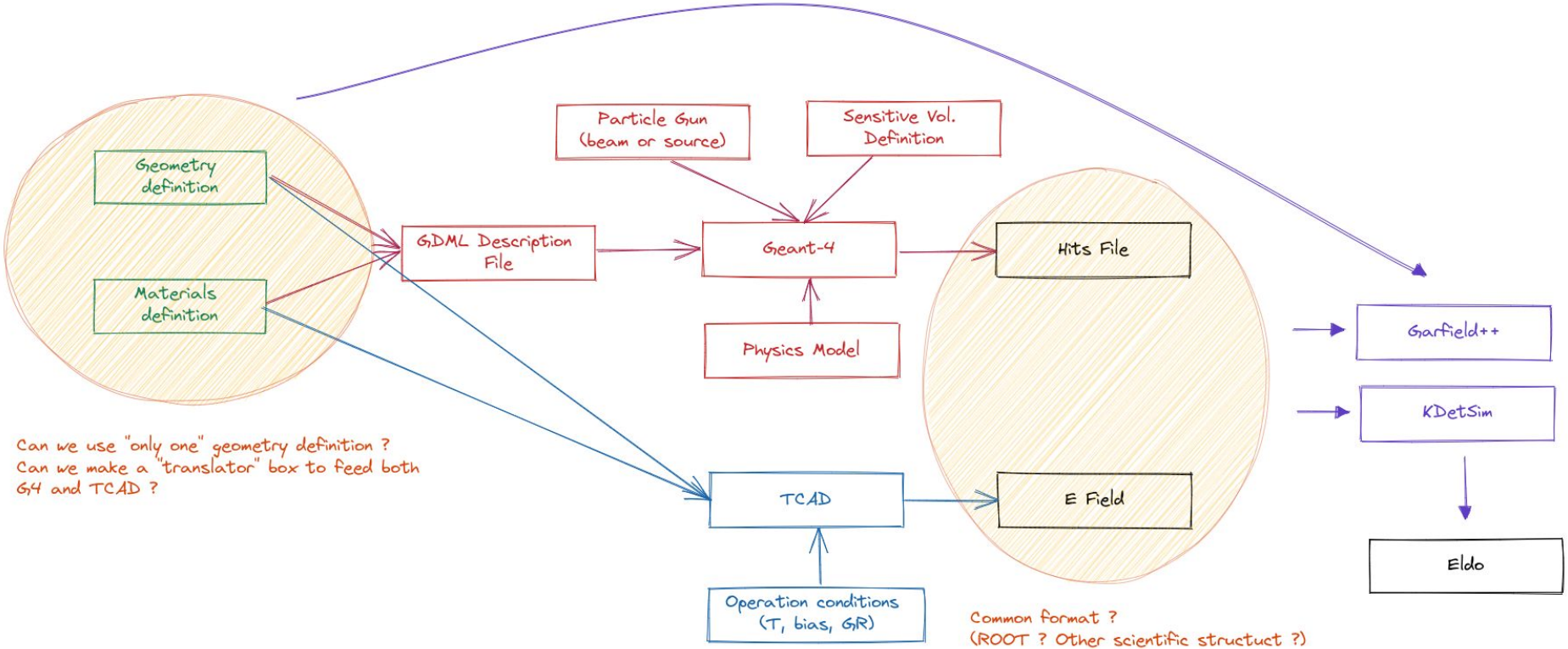
WG 5.2.1 Simulation Phase-I - Charge Transport



WG 5.2.1 Simulation Phase-I Outstanding issues

- Complete TCAD simulation for AC-LGAD example
- Export TCAD E-Field to Garfield++
- Produce validation plots

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 New activities

- Following X-Ray tests at SLAC SSRL in Nov. 2022
  - Simulate (G4) X-Ray energies and tested LGADS and AC-LGADS (3 types + pin + AC-LGADs)
  - Measurements between 5keV e 37keV ($\Delta E=10^{-4}$) p-lus harmonics, 2 10^{12} photons/cm^{2}s, 12.6 mm x 2.2 mm beam of 10ps pulses spaced by 2ns.
  - Include TCAD Simulation of the LGADS tested
  - We still need the detailed information of the structures from UC Santa Cruz group
  - G. Saito will make a comprehensive presentation of the results next meeting