

WG 5.2.1 Meeting Simulation - Phase-I

September 29th 2022

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WG 5.2.1 Simulation Phase-I

Recap: What is Phase-I ?

- 1) Radiation interaction with LGAD and other structures and hits output
 - a) Geant-4
- 2) Electrical field inside LGAD and I(t) output
 - a) TCAD
- 3) Standardize a format in a framework for data exchange between packages**
- 4) Document the steps and results here :

https://ultra-fast-silicon-detectors.gitlab.io/documentation/ufsd_online_documentation/

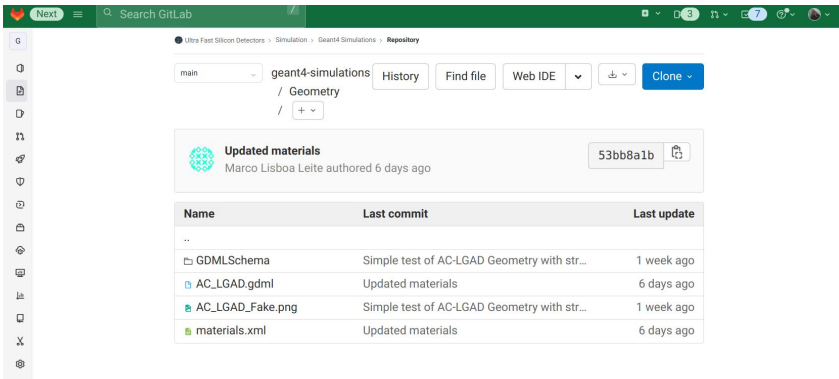
- 5) Gitlab repository :

<https://gitlab.com/ultra-fast-silicon-detectors/simulation>

We will soon move to a new repository with full Gitlab license (TBA)

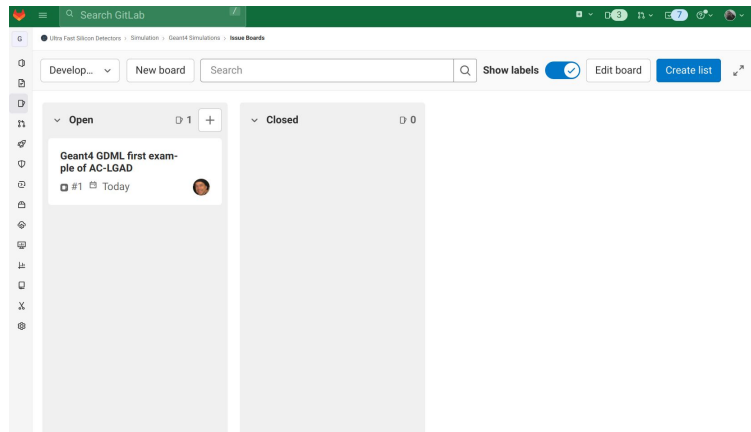
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Geant4 Gitlab



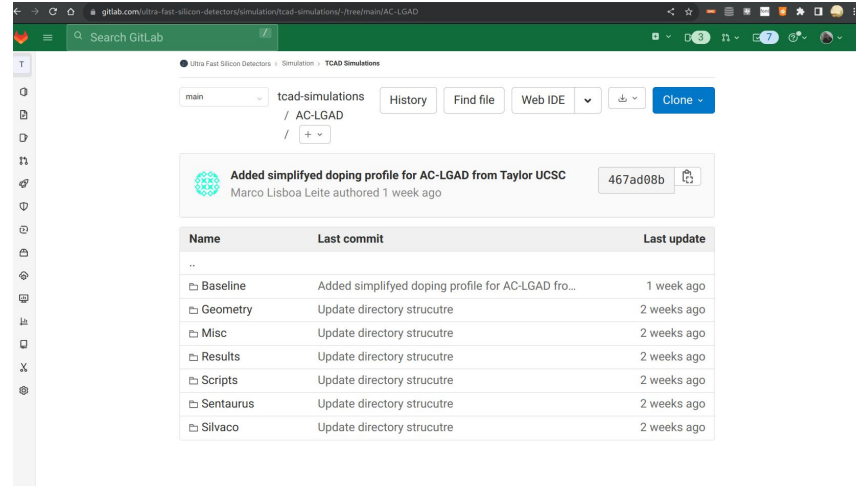
Screenshot of the Geant4 GitLab repository page. The repository is named "geant4-simulations" and is located under the "Ultra Fast Silicon Detectors" project. The current branch is "main". The page shows the repository structure, including a "Geometry" directory. A recent commit by Marco Lisboa Leite is highlighted, with the message "Updated materials" and commit hash "53bb8a1b". A table lists the files in the repository:

Name	Last commit	Last update
..		
GDMLSchema	Simple test of AC-LGAD Geometry with str...	1 week ago
AC_LGAD.gdml	Updated materials	6 days ago
AC_LGAD_Fake.png	Simple test of AC-LGAD Geometry with str...	1 week ago
materials.xml	Updated materials	6 days ago



Screenshot of the Geant4 GitLab issue board. The board is titled "Issue Board" and shows a list of issues. The "Open" column contains one issue: "Geant4 GDML first example of AC-LGAD" with ID "#1" and a status of "Today". The "Closed" column is currently empty.

TCAD Gitlab



Screenshot of the TCAD GitLab repository page. The repository is named "tcad-simulations" and is located under the "Ultra Fast Silicon Detectors" project. The current branch is "main". The page shows the repository structure, including an "AC-LGAD" directory. A recent commit by Marco Lisboa Leite is highlighted, with the message "Added simplified doping profile for AC-LGAD from Taylor UCSC" and commit hash "467ad08b". A table lists the files in the repository:

Name	Last commit	Last update
..		
Baseline	Added simplified doping profile for AC-LGAD fro...	1 week ago
Geometry	Update directory strucutre	2 weeks ago
Misc	Update directory strucutre	2 weeks ago
Results	Update directory strucutre	2 weeks ago
Scripts	Update directory strucutre	2 weeks ago
Sentaurus	Update directory strucutre	2 weeks ago
Silvaco	Update directory strucutre	2 weeks ago

- We will follow the tasks, milestones etc. using Git
- **All communication preferably done creating/answering the directly the issues**

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Simulation

Subgroup inform...

Epics 3

Issues 8

List

Boards

Milestones

Iterations

Merge reqes... 0

Security & Compli...

CI/CD

Packages and re...

Analytics

Wiki

Settings

USP > ... > Simulation > Issues

Open 8 Closed 0 All 8

Edit issues Select project to create issue

Search or filter results... Created date

Validate the GDML file syntax
usp9/UFSD/simulation/geant4-simulations#5 · created 3 days ago by Marco Leite updated 3 days ago

Test the GDML description in Geant4
usp9/UFSD/simulation/geant4-simulations#4 · created 3 days ago by Marco Leite updated 3 days ago

Finalize the GDML description
usp9/UFSD/simulation/geant4-simulations#3 · created 3 days ago by Marco Leite updated 3 days ago

Validate GDML Geometry construction
usp9/UFSD/simulation/geant4-simulations#2 · created 3 days ago by Marco Leite First functional example with G4 Sep 28, 2022 40 Needs attention Geant4 updated 3 days ago

Geant4 GDML first skeleton example of AC-LGAD
usp9/UFSD/simulation/geant4-simulations#1 · created 1 week ago by Marco Leite First functional example with G4 Oct 6, 2022 80 Needs attention Geant4 updated 3 days ago

Discuss how to extract geometry information from TCAD files
usp9/UFSD/simulation/tcad-simulations#3 · created 3 weeks ago by Marco Leite TCAD Initial configuration and development 20 Needs attention tcad updated 3 days ago

Verify UCSC AC-LGAD example
usp9/UFSD/simulation/tcad-simulations#2 · created 3 weeks ago by Marco Leite TCAD Initial configuration and development 50 Needs attention tcad updated 3 days ago

Explore the AC-LGAD first example in Sentaurus (UCSC)
usp9/UFSD/simulation/tcad-simulations#1 · created 3 weeks ago by Marco Leite TCAD Initial configuration and development Oct 6, 2022 30 Needs attention tcad updated 3 days ago

All communication preferably done creating/answering the directly the issues

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- 1) Let's discuss today at the end of the meeting a set of issues/goals
 - a) Follow the progress discussion opening/closing the issues on gitlab
 - b) Roadmap for the next 30 days (and beyond)
 - c) Give a weight (more important/less important) to each issue
 - d) Present the progress in the weekly meetings, with action items for next week

Our main goal and high priority is to give a simulation status report (G4 first results and TCAD E field) next week at the joint São Paulo - UC Santa Cruz meeting

Please register as an external user in Indico if you did not do it already !!!