

# Simulation of the NEBULA detector using Geant4

## Second presentation

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## Initial considerations

- Installing smsimulator, which uses libraries from ROOT and ANAROOT and headers and binaries from Geant4
- This software could be used to simulate the NEBULA detector with very high accuracy
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## Changed roadmap

- Temporarily abort the idea of using smsimulator
- Implementing a simplified version of the NEBULA detector
- It should be still able to give good approximations



# Technical details

## Detector geometry and behaviour

- Pure C++ environment using Geant4 headers and libraries
- Hardest part of the whole simulation process
- In this phase the user explicitly defines all parts of the detector and the behaviour of the simulation during different events

## Macros

- High level commands to give to a compiled simulation binary
- They define events (eg. particle beam shots) and visualizations
- Easy to construct them and can be reused for other simulations

## Automation

- Necessary to make the pipeline fast, easy to use and accurate
- Repetitive commands needs to be written only once

## Goals and progress made so far

- ✓ Installing and setup Geant4 and other softwares and libraries needed
- ✓ Testing the configuration by running the examples provided in the Geant4 install
- ✓ Automate the complete setup pipeline of the environment for Geant4
  - Implementing the NEBULA detector geometry in Geant4 using smsimulator
- ✓ Implementing the simplified NEBULA detector geometry in Geant4
- ✗ Create macros for the project
- ✗ Create neutron beam runs and analyse what's happening

