# Update on LIME simulation and SRIM

CYGNO simulation meeting – 6/05/2022
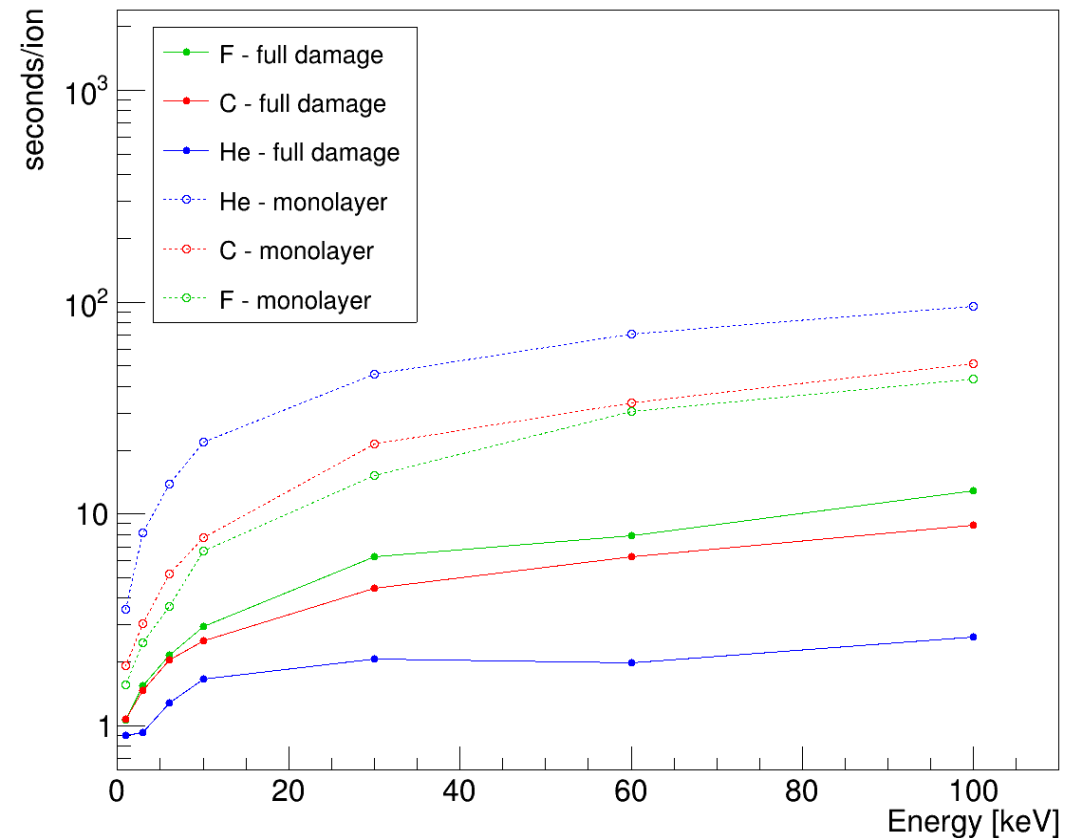
F. Di Giambattista

LIME geometry is fixed

- Giulia fixed LIME geometry with the new CAD files
- Once confirmed it's working well:
  - External background with the different shieldings (gamma and neutron)
  - Camera + lens (now it is shielded)
- We can run on CYGNO cloud
  - On my fork of CYGNO-MC there is a script and some instructions to run a simulation with HTcondor
- After testing I will make a pull request
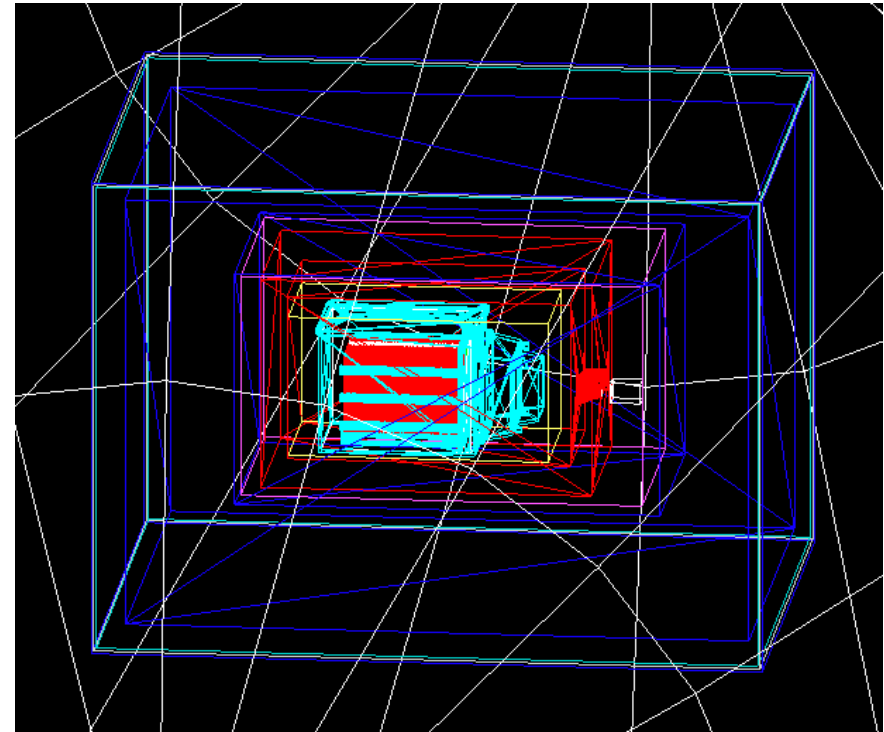
SRIM simulation

- We need a larger NR sample, but the "monolayer" SRIM mode is very slow
- I tested how much faster the "full damage" mode is
  - We would gain a factor ~7 in average
- The SRIM window pops up at each ion - to avoid it we could use a docker image
  - BUT it is slower https://pysrim.readthedocs.io/en/latest/benchmarks.html#docker-vs-standard-linux (75% increase in the time/ion)

Full damage vs Monolayer

- I digitised the sample I produced, Atul reconstructed the tracks
- I computed the shape variables and compared the two samples (100 ions each), and the difference in the distributions is always consistent with zero

- We could use this faster SRIM mode
- To make it faster, we could split the simulation among us (volunteers?)
- I created a repo for SRIM and the related analysis
- Question: what (large) sample should we produce? Random energy? How many ions?

Helium 30 keV, variable: integral

Fulldamage_SC_integral	
Entries	522
Mean	2.27e+04
Std Dev	1.163e+04

Monolayer_SC_integral	
Entries	522
Mean	2.252e+04
Std Dev	1.145e+04