Quick numbers on the detection of acoustic pulses from electromagentic showers

group meeting 19/03/20 - C. Gatius, 16/03/20 - MSc Thesis

Main research question:

Is acoustic detection a good approach for the detection of UHE neutrinos?

Second research question:

What is the impact of the LPM effect?

...which answer could answer:

Can we differentiate between NC and CC interactions?

Can we differentiate between NC and CC interactions?

NC interaction: hadronic shower + neutrino

CC interaction: hadronic shower + electromagnetic shower

To be able to differenciate CC and NC interactions we need to be able to...

- Detect acoustic pulses from electromagnetic showers
- Distinguish the electromagnetic acoustic pulses from the hadronic ones

some numbers before having all the simulations...

Can we differentiate between NC and CC interactions?



electromagnetic showers produce detectable acoustic pulses for shower energies above ~ 10**9 GeV





distances between pulses enough to be able to distinguish the electromagnetic and hadronic pulses

Can we detect acoustic pulses from electromagnetic showers? It seems so...!

Does that mean that we can differenciate NC from CC interactions? It seems so...!

Does that mean that we can test the LPM effect at HE? (only has been tested up to energies of 10**3GeV) It seems so...!

Let's wait for the complete simulation and analysis...