# Report from WP3 Detector Simulation

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## **Ongoing Tasks**

### CYGNO-04 internal background simulation <u>and Cu shielding</u>

Once the generation of radioactive nuclei in the various parts of the detector is optimized to reduce the run time, we are ready to start simulating and get the first results.

#### Comparison of background energy spectrum

Overall we reached a good comparison, especially for RUN 1 and RUN 2. Differences in RUN 3 are being investigated.

#### • Full simulation of Am photons at 59 keV

Soon, going to redo a full simulation of 59 keV photons in LIME with high statistics. But a first simulation with low statistics showed that the missing peak at 59 keV is probably because of saturation.

#### • Finalize data-MC comparison of PMT for 55Fe

Simulated iron waveforms have good shapes. The amplitude is now also comparable. Need more quantitative comparison in different positions of the iron source. Soon, with **PMT+camera reconstruction**, we'll be able to test the **PMT+camera simulation**.

#### Improve data/MC agreement of daily calibrations

We now understand better the dependence on environment variables, gas flow, etc... We need to **simulate day by day** according to the different environmental conditions, or **introduce a systematic error on data**.

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