## LIME: a gas TPC prototype for directional Dark Matter search for the CYGNO experiment

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- Looking for DM through directional signature of low energy nuclear recoils (NR) • LIME 50L prototype, now installed underground at LNGS • Gaseous TPC with GEM charge amplification and optical readout (1 sCMOS)
- camera + 4 PMTs)
- Tested overground at LNF with radioactive X-ray sources
- Measured energy resolution of  $\sim 15\%$  at 6 keV (<sup>55</sup>Fe)
- Stability tested for 1 month
- Response is linear and consistent with Monte Carlo (MC) simulation
- MC simulation of sCMOS images to study track shape and detector's response
- MC simulation of background at LNGS (in view of the upcoming data taking campaign background characterization, MC validation, neutron flux spectral measurement)

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