

The CYGNO experiment: status report

The CYGNO experiment is a 1-m^3 gas TPC for directional dark matter searches, as a prototype toward the $100\text{-}1000\text{-m}^3$ CYGNUS network of underground experiments. In such a TPC, electrons produced by dark-matter-induced nuclear recoils will drift toward and will be multiplied by a three-layer GEM structure, and the light produced in the avalanche processes will be readout by sCMOS cameras, providing a 2D image of the event with a resolution of a few hundred micrometers. Photomultipliers will also provide a simultaneous fast readout of the time profile of the light production, giving information about the third coordinate and hence allowing a 3D reconstruction of the event, from which the direction of the nuclear recoil and hence the direction of the incoming particle can be inferred. Such a detailed reconstruction of the event topology will also allow a pure and efficient signal to background discrimination.

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