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The CYGNO TPC: Optical Readout for Directional Study of Rare Events

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CYGNO is a project realising a cubic meter demonstrator to study the scalability of the optical readout concept for a large-volume, GEM-equipped TPC, to be employed as directional detectors for rare events detection.

The combined use of high-granularity sCMOS and fast sensors for reading out the light produced in GEM channels during the multiplication processes was shown to allow reconstructing 3D direction of the tracks, offering accurate energy measurements and sensitivity to the source directionality. This type of detector has demonstrated a high particle identification capability, very useful to distinguish nuclear from electron recoils.

Performance of the large prototype (50 litres sensitive volume, 50 cm drift gap, 1000 cm² readout plane) will be shown and discussed.

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