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Type: **Oral presentation (young scientists)**

The CYGNO/INITIUM experiment

Monday 18 July 2022 18:10 (10 minutes)

We are going to present the CYGNO project for the development of a high precision optical readout gaseous TPC for directional Dark Matter search and solar neutrino spectroscopy, to be hosted at Laboratori Nazionali del Gran Sasso. CYGNO (a CYGNus TPC with Optical readout) fits into the wider context of the CYGNUS proto-collaboration, for the development of a Galactic Nuclear Recoil Observatory at the ton scale with directional sensitivity. CYGNO peculiar features are the use of sCMOS cameras and PMTs coupled to GEMs amplification of a helium-based gas mixture at atmospheric pressure, in order to achieve 3D tracking with head tail capability and background rejection down to O(keV) energy, to boost sensitivity to low WIMP masses. We will discuss the latest R&D results within the CYGNO project and the underground installation and operation of a 50 l prototype, soon to be followed by a O(1) cubic meter experiment demonstrator in 2024-2026. We will furthermore illustrate the latest results on the negative ion drift operation at atmospheric pressure within CYGNO optical readout approach, which is the aim of the ERC Consolidator Grant project INITIUM.

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