

Report from PubComm

- Author list updated and placed in our wiki GitHub Home

<https://github.com/CYGNUS-RD/WIKI-documentation/wiki>

- A dedicated subpage has been created for PubComm (thanks to Fabrizio)...but I need to learn how to use it!
- Abstacts for Tipp 2021 and RD51 C.M.
- Papers in progress.

Submitted Abstracts

Tipp 2021

1- General on Cygno submitted by Davide Pinci

CYGNO is a project realising a cubic meter demonstrator to study the scalability of the performance of the optical approach for the readout of large-volume, GEM-equipped TPC to be employed as directional detectors for rare events study. 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 on one hand to reconstruct 3D direction of the tracks, offering accurate energy measurements and sensitivity to the source directionality and, on the other hand, 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.

2- Study on E.L. submitted by Fernando Amaro

CYGNO (a CYGNus TPC with Optical readout) fits into the wider CYGNUS proto-collaboration, developing a ton scale Galactic Nuclear Recoil Observatory with directional sensitivity for Dark Matter searches below the Neutrino Floor and Solar Neutrino Physics. Located at Gran Sasso National Laboratory (Italy), CYGNO will operate a TPC readout by a Micro Pattern Gaseous Detector ensuring charge multiplication and electroluminescence (EL) production. The visible component of the EL is collected by a sub-mm position resolution scientific camera, enabling particle identification and track reconstruction capability, crucial to measure nuclear recoils direction. In this work the EL produced in a Gas Electron Multiplier is read by a Large Area Avalanche Photodiode. EL yield, charge gain and energy resolution in He, CF₄ and iso-butane mixtures are measured with low energy X-rays. The inclusion of iso-butane, with its high H content, will allow to reduce the observable WIMP mass threshold.

RD 51 C.M.

Reconstruction and Identification of low energy nuclear and electron recoils in the CYGNO gas TPC with optical readout.

Talk By Emanuele Di Marco

Papers

1- The Cygno Experiment (general on Cygno) - C.A. Davide Pinci

2- Gem Gain Saturation Effect - C.A. Davide/Francesco

3- Background Simulation Studies - C.A. Giulia D'Imperio

4- Signals Simulation Studies - C.A. Fabrizio Petrucci

Emanuele created an AirTable in GitHub:

<https://airtable.com/shrzOTHNqWQ6tARSi/tbl3ESqx7hsxsv9EQ/viwxnTfCi1tZR5xRa?blocks=hide>