CYGNO
General Meeting 12 Dec 2024

CYGNO Collaboration Meeting 2024

Welcome address — Francesco Renga
Salone degli Stemmi, Palazzo Pubblico — 14:00 - 14:10

Institutional greetings
Salone degli Stemmi, Palazzo Pubblico — 14:10 - 14:15

Brief review of latest results in direct DM searches — Elisabetta Baracchini
Salone degli Stemmi, Palazzo Pubblico — 14:15 - 14:30

LIME status — Stefano Piacentini
Salone degli Stemmi, Palazzo Pubblico — 14:30 - 14:50

Early LIME DM limit — Rita Antonietti
Salone degli Stemmi, Palazzo Pubblico — 14:50 - 15:10

Neutrino physics case — Samuele Torelli
Salone degli Stemmi, Palazzo Pubblico — 15:10 - 15:35

Negative Ion Drift update — Elisabetta Baracchini
Salone degli Stemmi, Palazzo Pubblico — 15:35 - 16:10

Update from LNF (GIN and GEMs) — Giorgio Dho
Salone degli Stemmi, Palazzo Pubblico — 09:00 - 09:30

Status of Computing — Igor Abritta Costa
Salone degli Stemmi, Palazzo Pubblico — 09:30 - 09:50

Status oc CYGNO04 drawings — Sandro Tomassini
Salone degli Stemmi, Palazzo Pubblico — 09:50 - 10:20

CYGNO-04 Monte Carlo — Giulia D'Imperio
Salone degli Stemmi, Palazzo Pubblico — 10:45 - 11:05

CYGNO-04 background — Melba D'Astolfo
Salone degli Stemmi, Palazzo Pubblico — 11:05 - 11:30

Detector simulation and digitization — Pietro Meloni
Salone degli Stemmi, Palazzo Pubblico — 11:30 - 11:55

PMT simulation — Luan Gomes Mattosinhos De Carvalho
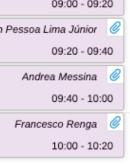Salone degli Stemmi, Palazzo Pubblico — 11:55 - 12:20

Status of Analysis — Giorgio Dho
Salone degli Stemmi, Palazzo Pubblico — 14:30 - 14:50

Status of Reco — Giorgio Dho
Salone degli Stemmi, Palazzo Pubblico — 14:50 - 15:10

Run3 and Run4 data analysis — Rui Daniel Passos Mano
Salone degli Stemmi, Palazzo Pubblico — 15:10 - 15:35

AmBe results — Davide Pinci
Salone degli Stemmi, Palazzo Pubblico — 15:35 - 16:00

3D reconstruction — David José Gaspar Marques
Salone degli Stemmi, Palazzo Pubblico — 16:00 - 16:30

Run4 Lowgain analysis
Salone degli Stemmi, Palazzo Pubblico — 16:30 - 16:50

Saturation measurements and theory — Davide Pinci
Salone degli Stemmi, Palazzo Pubblico — 16:50 - 17:15

Image signal selection for trigger — Igor Fonseca Pains
Salone degli Stemmi, Palazzo Pubblico — 17:15 - 17:40

Machine learning for pixel selection — Guilherme Lopes
Salone degli Stemmi, Palazzo Pubblico — 17:40 - 18:05

Calibration system for Cygno_04 — Davide Pinci
Salone degli Stemmi, Palazzo Pubblico — 09:00 - 09:20

Trigger and data acquisition system for Cygno_04 — Herman Pessoa Lima Júnior
Salone degli Stemmi, Palazzo Pubblico — 09:20 - 09:40

Software trigger for Cygno_04 — Andrea Messina
Salone degli Stemmi, Palazzo Pubblico — 09:40 - 10:00

Gas system for Cygno_04 — Francesco Renga
Salone degli Stemmi, Palazzo Pubblico — 10:00 - 10:20

Results from Field Cage Foils measurements — Donatella Tozzi
Salone degli Stemmi, Palazzo Pubblico — 11:00 - 11:20

Copper Cleaning Procedures — Davide Pinci
Salone degli Stemmi, Palazzo Pubblico — 11:20 - 11:40

Report on financial status
Salone degli Stemmi, Palazzo Pubblico — 11:45 - 12:05

Report from PubComm
Salone degli Stemmi, Palazzo Pubblico — 12:05 - 12:25

Conclusion and discussion on future plans
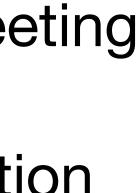Salone degli Stemmi, Palazzo Pubblico — 12:30 - 13:00

30 talks, very interesting and fruitful meeting

thanks to Francesco R for the organisation and to Cagli for the hospitality

2024 Summary

2024 has been a hard year that has paid off:

- the operation of LIME, the DAQ auxiliaries and the reconstruction is now proceeding automatically, and has not given any serious problems (apart from yesterday) for a year;

- LIME's data analysis indicates an excellent understanding of the detector, signals and the ability to reconstruct events within it

- the comparison between data and MC, although not yet completely under control, shows good agreement and above all has made it possible to highlight aspects to be studied which have opened up new lines of study;

- the drawings of cygno04 are closing, many details are still missing and the work of the coming months must focus on those

Davide Pinci, INFN - Roma

WBS ID	TASK	DESIGN and PROCUREMENT (2023)			CONSTRUCTION, TEST & ISTALLATION (2024)			COMMISSIONING – DATA TAKING (2025-2026)						DATA TAKING - DECOMMISSIONING (2027)		
		1-4	5-8	9-12	1-4	5-8	9-12	1-4	5-8	9-12	1-4	5-8	9-12	1-4	5-8	9-12
WP1	**Physics**															
1.1	solar neutrino sensitivity										M.1.1					
1.2	dark matter sensitivity										M.1.2					
1.3	physical parameters PHASE 2													D1.1		
WP2	**Data Analysis**															
2.1	reconstruc/background v0						M2.1									
2.2	reconstruc/background v1								M2.2							
2.3	detector analisys PHASE 1													D2.1		
WP3	**Detector Simulation**															
3.1	valdete PHASE 0 results			M3.1												
3.2	Montecarlo for PHASE 1						M3.2									
3.3	estimation for PHASE 2													D3.1		
WP4	**Detector Design and Construction**															
4.1	executive layout infrastructure			M4.1												
4.2	executive layout of the detector						M4.2									
4.3	procurements of components							M4.3								
4.4	install infrastructure						D4.1									
4.5	install detector								D4.2							
4.6	commissioning & calibration										M4.4 -> D A T A T A K I N G					
4.8	decommissioning															D4.3
WP5	**Auxiliary Services**															
5.1	validating gas system	D5.1														
5.2	validating DAQ v0			M5.1												
5.3	validating DAQ v1						D5.2									
WP6	**Research and Development**															
6.1	validating large GEM			M6.1												
6.2	validating sensors and lens					D6.2										
6.3	validating field cage component					D6.1										
6.4	validating R&D for PHASE 2												D6.3			D6.3
6.5	validating radioativity detctors components						M6.2									
6.6	validating handling of detctors components						D6.4									
WP7	**Management**															
7.1	ERC-FRP3		M7.1								M7.2					
7.2	ERC-FRP4															
7.3	CSN2 Progress Report		M7.3			M7.4			M7.5			M7.6		M7.7		
7.4	ERC-SRP2										D7.1					
7.5	CSN2 Final Report															D7.2

4

2025 Plans

Next year will be crucial for the advancement of the business we will have to:

- close all drawings and place the last orders to companies for material procurement;

- follow up on the work in hall F for the construction of the infrastructure

- proceed with the construction of cygno 04 and the copper and water screen

- proceed with underground installation and commissioning by the end of the year

- continue in the meantime with LIME understanding, data analysis and simulation optimisation