

Dear LNS Users,

In the following a summary of the 2024 LNS User Annual meeting, which was held at LNS on September 30th 2024.

The LNS User Committee, elected on February 2023, includes two members of the last User Committee and three new members. The first annual community meeting of LNS Users, originally planned to be held in spring 2024, was postponed to the end of summer 2024, in order to wait for the finalization of some phases of the laboratory upgrade (PotLNS project).

The meeting was held in Aula Migneco, at LNS, a zoom connection was provided for remote participation. More than 70 participants registered at the meeting, and 50 of them attended in person.

The aim of the meeting was to give to the whole LNS User community an update on the POTLNS project, on the status of the accelerator machines maintenance and upgrade and to give to the users an opportunity to reconnect themselves and discuss new ideas for the future research activities to develop at the LNS in the near future.

All the meeting presentations are available on the Indico LNS website at the link <https://agenda.infn.it/event/43115/>; we encourage the Users to take a look to find all the details discussed during the meeting.

We take this opportunity to thank all the speakers for sharing with the community the status of the work and the tentative schedules for the different phases of the POTLNS works, as well as the participants that contributed to the discussion of critical aspects and new ideas.

The two years mandate of the UC members is about to expire and very soon new elections will be held.

The User Committee members acknowledge gratefully all the LNS Users for their help and suggestions concerning all the activities performed in the last two years.

Catania, February 2025

The LNS Users Committee

Antonio D'Amico

Elena Geraci (Coordinator)

Chiara Guazzoni

Sara Palmerini

Antonio Trifirò

MINUTES OF THE LNS USERS MEETING

(Aula Migneco, LNS, 30/09/2024)

Welcome address on behalf of Director (*Enzo Greco*)

The welcome address was given by Enzo Greco, Associate Manager of LNS, as the Director had a medical emergency in the morning. Prof. Greco briefly summarized the several activities performed at LNS in the last months, underlining the important scientific role of LNS in participating or leading several projects funded in the context of the Next Generation EU program.

Welcome address from the LNS Users Committee (*Elena Geraci*)

The Coordinator of the LNS UC welcomed all the participants and introduced the members of the User Committee, three of them present physically and two of them connected on zoom.

During the first year of the mandate the UC worked hard to keep the users informed on the evolution of the POTLNS upgrade, sending updates, every 4-5 months, on the progress of the works related to the infrastructures, the accelerator machines maintenance and upgrading and the required administrative procedures.

Conclusive steps POTLNS (2024-2025) (Mario Musumeci)

The Project Scientific coordinator of the POTLNS Project, Mario Musumeci, presented the project's goal and the project timeline, highlighting the series of project extensions obtained, which set the end of the project in June 2025. The talk gave details on the complex superconductive magnet design, construction and assembling. The status and delivery of the stripper and the new extraction method was reported as well as the problems concerning the CS liners. The masonry works for the new shields were performed and the new experimental areas, for Fraise, for Magnex experimental room and beam lines were described. The Scientific Coordinator underlines that most of the sub projects were completed while the CS low liner should be delivered by the end of November; Fraise and Beam Dump line completed by January 2025, while the superconductive magnet delivery is expected by March 2025.

The Activities of the LNS Accelerator Division (Danilo Rifuggiato)

The Head of the Accelerators division at LNS, Danilo Rifuggiato, illustrated the status of the accelerators and ionic sources at LNS. He described in details the actions required to implement the new extraction method by stripping and the different components ordered. He described the test performed on the new superconductive magnet, on the compatibility of the liner, the characterization of the central ring sectors, and all the activities related to the re-start of the machines. A very detailed schedule of the necessary steps for the operation of the CS was shown, with some actions expected by the end of the 2024 that have to be postponed to the first quart of 2025. The delays, mainly due to external actors,

induce to forecast the operation of the CS with low intensities beams around second half of 2026. Several maintenance works on the Tandem Accelerator are scheduled for the end of 2024, even if some actions could be delayed by some necessary works to remove asbestos found in one site. The head of division underlines the critical situation of the accelerator division, where several retirements left positions that were not replaced; this makes more difficult the accomplishment of the different tasks and it suggests to avoid the restart of the tandem before the end of the work on the CS, due to lack of manpower.

Status of the Fraise facility (Paolo Russotto)

The Scientific coordinator of Fraise facility, Paolo Russotto, reported on the new elements of the facility that were delivered or assembled; the assembling of the Fraise production target was described, its handling system, and the dedicated area. Some results on simulations were also discussed.

Radio-protection Authorization Procedures: Status (Renata Leanza)

Renata Leanza, on behalf of the Radioprotection Division, presented the status of the new authorization requested by the PotLNS upgrade. The authorizations related to Magnex and Fraise area and the CS area were described and the next steps necessary for the final authorization were illustrated. The implemented radiation system was also illustrated.

Activities of the LNS Research Division (Aurora Tumino)

The Head of the Research division at LNS, Aurora Tumino, made an overview of all the activities within the User Service, the Scientific Information Service, the Computing Service and the Service for the Development of Experimental Equipment and Apparata

Descriptions on the new area dedicated to I-Luce interaction room, ion sources and on the activities performed at the Alpha-Laboratory of LNS were illustrated. The new experimental area and apparata were also described in detail.

Activities of the User Division (Alessia Di Pietro) The manager of the user service, Alessia Di Pietro, illustrated the management and development of research infrastructures. The activities of the Marine Technologies department were described as well as the activities of the electronic and detector department; the tasks performed by the Chemical-Physical Techniques Laboratory were detailed as well as the management of all the experimental apparata. The works planned for the 60° and 80° beam lines were listed.

Activities of the Theoretical Physics Group (Maria Colonna)

Maria Colonna illustrated the initiatives of the Theoretical Physics Group of LNS, detailing some topics, as Double Charge Exchange (DCE) or the collective excitations in deformed nuclei that were recently addressed. An overview of the opportunities given by Eurolabs funds was also discussed.

A Round Table on future experimental activities at LNS

In the afternoon a round table on “Future experimental activities at LNS” was proposed. Several users presented results recently achieved or proposal for new ideas to be explored.

In the following a list of the speakers:

“Astroparticle Physics Group”, Giorgio Riccobene and Rosa Coniglione

“RED and RED+”, Luciano Pandola

“Investigating the timing response of new-generation SiC detectors”, Nunzia Martorana

“Asfin@LNS”, Rosario Gianluca Pizzone

“Study of properties and efficiency measurements of NARCOS” Brunilde Gnoffo

“NETI - Noble Elements Targets Implantator”, Roberta Sparta'

“Chirone @ LNS”, Sara Pirrone

The meeting was ended with closing remarks from director Santo Gammino and LNS User Committee members.