SND@LHC



- The most recent LHC experiment
 - Proposed & Approved & Constructed in 2021
 - LIP is a **founding member** of the new collaboration
 - LIP involved in the construction of the muon system
- Experiment installed in time for LHC Run3 (2022)
 - LIP team centrally involved in assembling, beam testing, **commissioning** and calibration of the detector
 - Team actively involved in data taking and operations
- First results (seminar)
 - First physics results just released (March 2023)
 - LIP team centrality involved in the **analysis** of the **data**





CERN/FIS-INS/0028/2021

CERN Accelerating science

New LHC experiments enter uncharted territory

The first observation of collider neutrinos at the LHC paves the way for exploring new physics scenarios

Observation of Collider Neutrinos with SND@LHC



a new LHC experiment (9th) with LIP's involvement (3rd)













Upgrade

• LIP will **install** a novel muon flux detector

- we will build and install a **sealed-RPC** prototype telescope in SND@LHC tunnel for operations in Run3
- validate muon flux modelling measuring different angular locations, also input for upgraded detector positioning
- HL-LHC (Run4) detector upgrades being defined



Personnel

- new **researcher** joined 2023 (C.Vilela, also Neutrino group)
- started PhD fellowship in 2022 (G.Soares, PT-CERN)
- new MSc, several internship and undergraduate students

Strengths

- team formed of consolidated researchers, diverse backgrounds, incl. detector & physics analysis
- executing a first **FCT** funded project awarded for SND@LHC

SHiP

- LIP is **proponent** of SHiP: a next-generation experiment for exploring the Hidden Sector
 - proposal submitted (2022) for installation at ECN3
- LIP involved in Timing and Veto detectors
- SPSC favourable recommendation
 - for intensity upgrade at ECN3 location (February 2023)
 - experimental proposals being scrutinised (ongoing)



Weaknesses/ Threats

 insufficient funding, in view of ongoing and planned activities, and for student support

Opportunities

- extend LHC physics reach, fresh & unique LHC data
- take part in detector upgrade, SPS & LHC phases 1 & 2, in detector & physics



2033
LS4



