



## Neutrino platform at CERN: Theory

Ana M. Teixeira

Laboratoire de Physique de Clermont - LPC



Plenary meeting of the Neutrino GdR

APC Paris, 29 May 2017

# CERN Neutrino Platform - Theory

- ▶ **CERN Neutrino Platform (CENF):** ... *an effort to foster fundamental research*



*in the field of Neutrino Accelerator Physics ...*

[CERN Council, 2013 European Strategy]

- ▶ **CENF-EP (Experimental Physics)**

Participate in **accelerator-based neutrino projects** in Japan & US (**SBL** and **LBL**)

Coordinate CERN's participation as a collaborating institute (including **DUNE**)

Focal point of accelerator-based **experimental  $\nu$  community in Europe**

Bring  **$\nu$ -community** together, close collaboration with the CERN **TH neutrino group**

- ▶ **CENF-TH (Theoretical Physics)**

**Promote TH  $\nu$  physics at CERN;** connections worldwide- $\nu$  physics community

Activities carried by **CERN Theory Dept.**, coordinated with **Fermilab Theory group**

**TH Neutrino Platform coordinators:**

**G. Barenboim, P. Coloma, P. Hernandez, P. Huber, S. Pascoli, T. Schwetz**

# CERN TH Neutrino Platform: kick-off meeting

- ▶ Kick-off workshop 27-31 March '17: “Neutrinos: the quest of a new physics scale”
  - ~ 80 participants, state-of-art reviews & dedicated talks; discussion (!)
- ▶ **Physics topics included:**
  - ★ **Status** of neutrino oscillations, oscillation anomalies,  $\nu$  properties from cosmology
  - ★ **Neutrino masses and theories of flavour;** flavours (and CPV) from symmetries
  - ★ **Beyond  $3\nu$  scenario in experiments:** eV@LBL, MeV@SBL, GeV@SHiP, extra dims, ...
  - ★ **Lepton Number violation:**  $0\nu 2\beta$ , alternative searches, impact for BAU
  - ★ **Neutrinos and charged lepton flavour violation:** effective approach and observables
  - ★  **$\nu$  portal to BSM:** NSI, new interactions, determination of CPV phases
  - ★ **Neutrino physics at colliders;** improving LHC searches for neutrino related phenomena
  - ★  **$\nu$  portal to DM:** status, sterile  $\nu$ , ...
  - ★  **$\nu$  and cosmology:** leptogenesis, astro and SN  $\nu$ , solar neutrinos, PeV  $\nu$
  - ★ New topics (e.g. neutrinos and gravitation, ...)

## Future activities

⇒ **Neutrino Platform Week @ CERN, January 2018** (↔ DUNE collab. meeting)

Topic: Oscillations and BSM physics @ DUNE; Joint sessions with physics WGs

Chair: G. Barenboim

⇒ **Neutrino Theory Workshop @ Fermilab, April-May 2018**

Topic: Wider focus...

Chair: P. Coloma, S. Parke

⇒ **Neutrino Theory Institute @ CERN** (Summer 2018) ??

★ If you want to be added to the mailing list of the theory platform, please register:

<https://th-dep.web.cern.ch/neutrino-platform-theory>