# CENF-ND FORUM ORGANISATION



## THE CENF-ND FORUM ORGANISATION

- The forum aim to address different topics
- to better organise the work, 5 Working Packages are proposed
  - WG 1 : Measurement of neutrino flux
  - WG 2 : cross-section, theory
  - WG 3 : cross-section, experimental
  - WG 4 : sensitivity studies
  - WG 5 : requirements for detectors and R&D



### THE CENF-ND FORUM ORGANISATION

- The main idea is that WG 1-4 will collect/perform physics studies on the topics they are concerned on, and from there they would derive detector requirements (vertex, energy resolution, neutron tagging, ...)
- detector requirements and suitable technology can then be discussed and developed in collaboration with the WG5
- studies and possible R&D can be also be proposed at today, to address known issues in detector development
- A list of sub-topics for each WG has been prepared, to be regarded as a starting point.



#### MEETINGS

- Each WG should auto-organise its work.
  - Each WG should define convenors and organise regular meetings
  - Given the heterogeneity of the membership, and the need to appropriate the existing knowledge, the first meeting could be devoted to summarise, merge and digest the existing studies for the topics of interest of each WG.
  - General CENF-ND meetings will be organised (with a less frequent regularity), where the WG will share their work
- Dedicated mailing lists for each of the WG are already prepared. Please auto-subscribe, (https://e-groups.cern.ch/e-groups/Egroup.do?egroupName=CENF-WG#&tab=3) or send an e-mail to Paola or Stefania.
- A short mail from each member with expression of interest for one or more (sub) topics would be welcome.
- No formal action is required (except for hardware work or travel to CERN), neither formal engagement on dedicated time.. We all trust our mutual interest!
- If interested and available, you can volunteer for convenership



## MATERIALS

- There is a dedicated twiki page for each WG, open to the CENF-ND members: https://twiki.cern.ch/twiki/bin/view/CENF/NearDetectorWG#
- Please feel free to post material there, links to existing documents, events, references, slides, memos...
- Software?
- Indico pages for meetings:
  - General Near Detectors: <u>https://indico.cern.ch/category/9460/</u> (<u>Home » Projects » CENF » Near Detectors</u>)
  - Working groups: will create sub-categories



R&D

- Small-size R&D not needing beam time can be organized within the Neutrino Platform, under the PLAFOND umbrella (<u>https://edms.cern.ch/ui/file/1405498/1/Addendum\_No\_1-PLAFOND-FINAL-031214.pdf</u>)
- For larger R&D project, a request to SPSC has to be submitted. A call for R&D projects for the platform is foreseen for the October SPSC meeting.



## **NEXT STEPS**

- Today: questions, comments, discussions
- Next two (?) weeks: working groups ready with convenors
- Work during holidays..
- Choose a date in September for next general (videoconf) meeting. Proposed period is September 9-22, let's do a doodle for this?



# **ADDITIONAL MATERIAL**



# WG1:MEASUREMENT OF NEUTRINO FLUX

https://twiki.cern.ch/twiki/bin/view/CENF/NearDetectorWG1

- The e-scatter method : define requirements for detector, needed exposure, study dependence on nu angle, possibility to measure nu energy, precision achievable, limitations.
- The low-nu method: requirements for detector, needed exposure, reliability at low energies, precision achievable, limitations.
- Hadroproduction
- Beam monitoring and synergies with muon monitors
- Other ideas (nu-prism...), but also the "spectrometer" for DUNE beam, ENUBET
- Example studies of "real" detectors..
- Near-to-far extrapolation



# WG2: CROSS SECTIONS, THEORY

https://twiki.cern.ch/twiki/bin/view/CENF/NearDetectorWG2

- Review status of neutrino generators vs data, identify areas of development
- Comparisons with electron scattering data if available in the generators
- Generate a test database with available data
- Stimulate new/complementary experimental programs where needed
- Address in detail the electron-muon and neutrino-antineutrino differences, extrapolate achievable precision



# WG3: CROSS SECTIONS, EXPERIMENTAL

https://twiki.cern.ch/twiki/bin/view/CENF/NearDetectorWG3

- Target nucleus
- Detector effects on event identification
- Detector effects on energy reconstruction
- Needed coverage (is 4pi necessary?)
- Need magnetic field ?
- Identify "control samples" or distributions to validate models and reconstruction



## WG4: SENSITIVITY STUDIES

https://twiki.cern.ch/twiki/bin/view/CENF/NearDetectorWG4

- Analyze the relative contribution of different systematic errors to the final sensitivity
- Compare different methods: VALOR, Minos, Nova, Mach3...
- Evaluate need for / develop new tools
- Provide guidelines to WG1-WG3 in terms of required systematic/statistics

The WG will work as part of the DUNE and HK collaborations and also learn from the existing experiment (NOvA, T2K, MINOS..)



## WG5: REQUIREMENTS FOR DETECTORS AND R&D

https://twiki.cern.ch/twiki/bin/view/CENF/NearDetectorWG5

- Gather detector requirements from past experience and other Wgs
- Search for detector techniques possibly matching the requirements
- Steer R&D efforts

Small R&D not needing beam time can be done already from now under the PLAFOND project

Large R&D project need to be submitted to the SPSC (usual path for possible Neutrino Platform projects)