Brief Summary of European Neutrino Town Meeting CERN, Oct. 22-24

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SAC Meeting

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European Neutrino "Town" meeting and ESPP 2019 Discussion

- The European Strategy for Particle Physics is owned by the CERN Council
- Purpose & Goals from https://indico.cern.ch/event/740296/overview
  - Form basis for document to inform the European strategy process over the coming year
  - Take stock of the "present" long-baseline program, including JUNO, DUNE and Hyper-K
  - Should also address status & future of Short Baseline Program
  - Consider the future

> 5. address the question of the future of the field
> – with neutrinos beams to complete the present LBL program
> – includes HP-TPC, nustorm, moment, P2O and R&D on supplementary detector methods
> -- searches for 'sterile/Right-handed neutrinos' with the existing or foreseen neutrino near detectors as well as with beam dump experiments such as SHIP
> – the role of LHC and future collider projects in the general neutrino research such as search for sterile/RH neutrinos.

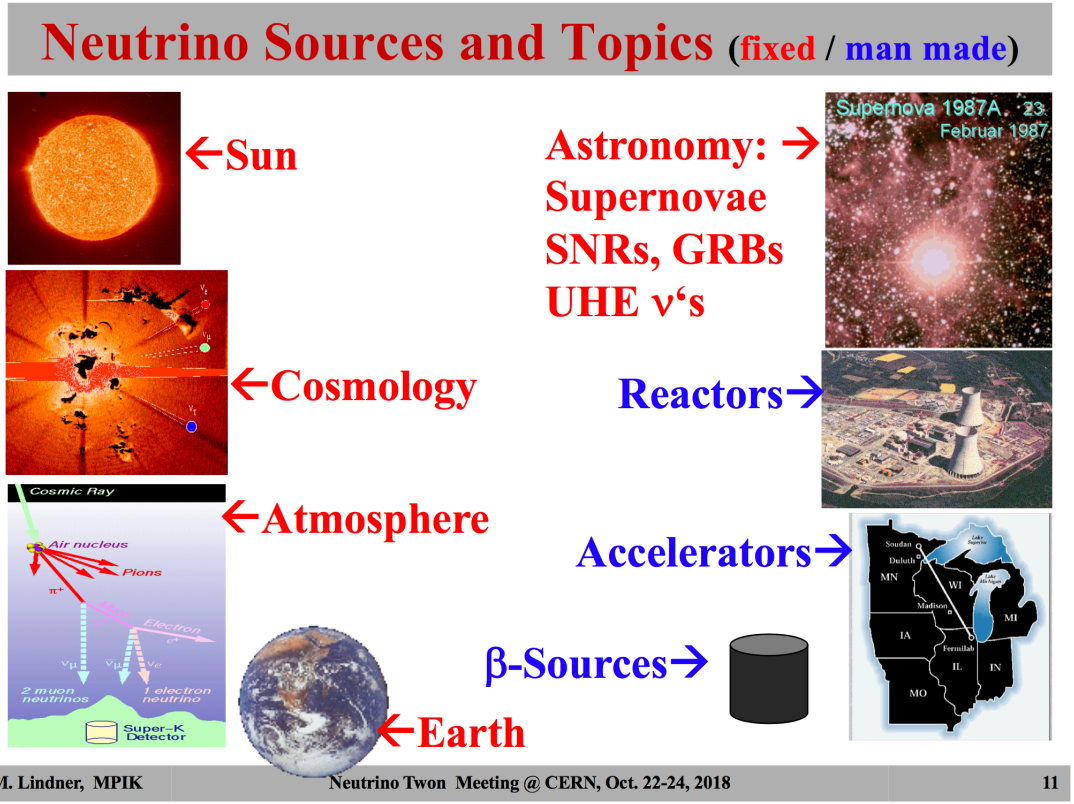
- Our personal opinion
  - many of the discussions seemed to reflect a lack of awareness of the explicit accelerator-based focus of the strategy
  - The first clear statement on the exclusiveness of this focus was made by Fabiola Gianotti with minutes left in the meeting

Other background - Hyper-Kamiokande

- University of Tokyo Hyper-Kamiokande Statement from Sept. 12
  - Current seed funding from MEXT for HK is small, but such funding is usually followed by full funding the next year.
  - The University “pledges to ensure” start of construction as scheduled April 2020.
- Hyper-K proto-collaboration has 300 people from 76 institutes in 15 countries
  - 13 institutions in the US

Overview of Presentation Topics

- A broad (if brief) survey of the field
- Non-beam topics were heavily represented.
  - Lindner gave the Overview talk focus more on non-accelerator topics
- Possible new facilities
  - ENuBet, nuSTORM, ESSnuSB
- Panel Reports
  - Panel 1 - Standard oscillations
    - Need for complementarity
    - Importance of 2nd oscillation maximum
    - Need for systematic uncertainties to match eventual global statistics of ~1-2%
  - Panel 2 - Majorana/Dirac, HNL, NSI, etc
  - Panel 3 - neutrinos & the Universe
  - Panel 4 - Ancillary measurements



Take aways from discussions

- A clear pivot in Europe to HK following the Tokyo statement
  - Round Table Discussion: “Can we afford two long-baseline facilities”
    - “Yes” from the T2K participants
- A heavy emphasis on non-accelerator-based neutrino physics
- Questions of what to do with the CERN neutrino platform after completion of protoDUNE and other DUNE commitments
  - Support for role in ancillary measurements - hadron production, cross-sectionsd
  - No evident enthusiasm for the 4th DUNE Far Detector
- Throughout the discussions, need for better-characterized neutrino sources for the high-precision era
  - Discussion of larger initiatives focused on nuSTORM and EnuBET
- The idea of focusing on R&D for choosing a path for a large initiative emerged as a key point near the end of the meeting
- Upside for US/Fermilab
  - Understanding in the discussions of physics opportunities provided by LBNF Near Site