‘P5 and Beyond’ Panel: quick recap and next steps

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- special thanks to Panel participants!
  - Mayly Sanchez, moderator
  - Davide Basilico, Alexey Boyarsky, Christophe Bronner, André de Gouvêa, Peter Denton, Steven Gardiner, Sowjanya Gollapinni, Patrick Huber

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preservation of memory

- many insights on exciting opportunities, important needs, possible synergies, …

- we would like to retain some memory or record of yesterday's thoughtful discussion

  - recording from Panel discussion will be made available on NuFact24 Indico
    https://indico.fnal.gov/event/63406/sessions/24791/#20240920

- rather than attempting to summarize a diverse collection of perspectives, we instead briefly highlight discussion areas and representative examples

  - next steps: proceedings contributions

broad range of issues canvassed in discussion

- How to maximize the scientific potential of upcoming neutrino experiments/facilities? How to leverage complementarities?
  - joint analyses; exchanges among/between collaborations; …
  - generator development; …
  - uncertainty quantification in fits and for generators; …
  - measurements beyond oscillation program (e.g., BSM searches); …

- Are there synergies between neutrino physics and other sectors?
  - cosmological measurements; relic neutrino searches; …
  - $0\nu\beta\beta$; CLFV; …
  - (direct) dark matter searches; …
  - astrophysical observations; …
  - input from colliders in electroweak sector

broad range of issues canvassed in discussion, ii...

- How might the neutrino landscape evolve in the coming decade? What scenarios should we prepare for? How to lay groundwork for these?
  - 2030s look exciting, promising; lots of room for surprises; …
  - Extensive activity beyond oscillation searches: beam dump expts, astro, ND/FD studies
  - In historical terms, neutrino progress has been rapid (cf. Higgs discovery)
  - Need to better understand experimental correlations; HEP-NP overlaps; …

- What might be the potential role of neutrino factories? How might neutrino factories complement or surpass, e.g., DUNE and Hyper-K?
  - Neutrino factories are essential consideration within NuFact purview
  - Might anticipate scenarios involving DUNE/Hyper-K tensions

- Wish list for 2040?
  - clear(er) indication of tension/discrepancy with theory; resolution of anomalies; expect the unexpected (?); local core-collapse supernova; HNL detection; …

dedicated NuFact proceedings contribution(s)

- closeout talk (Maury Goodman) will provide an overview of proceedings
  - we believe a plenary-level proceedings contribution related to the Panel could be valuable for highlighting priorities
  - ’audience’ comments are also valuable
  - panel members can incorporate into proceedings

- invite continued input into public Google doc

thanks again to all!