



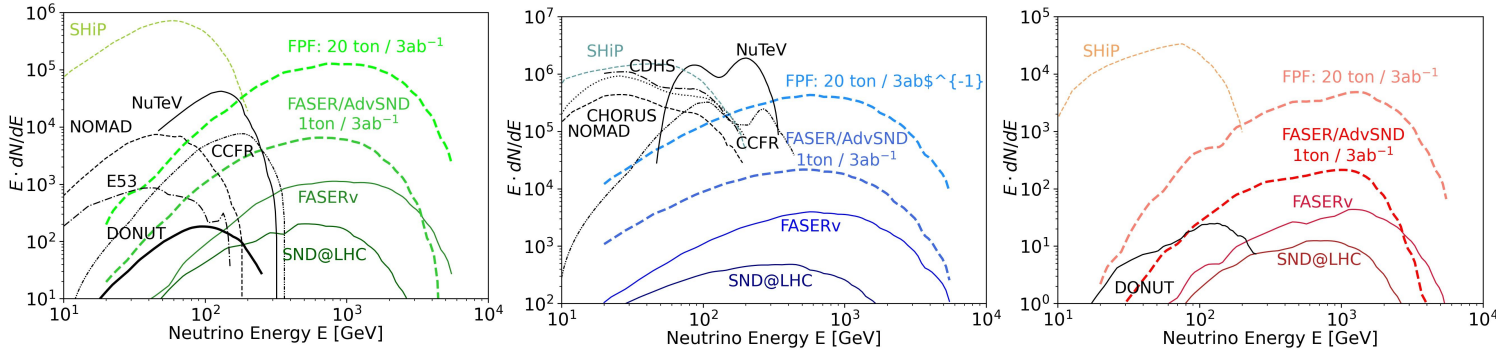
FPF EPPSU Input.

Felix Kling (DESY)
Neutrinos at CERN
24.01.2025



FPF Science: Neutrinos.

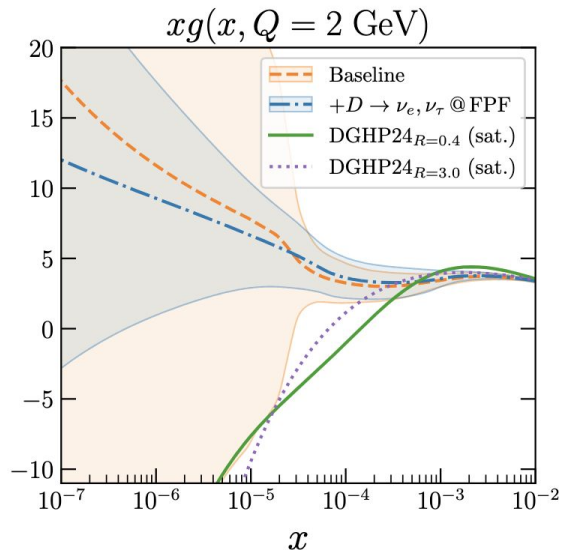
LHC is source of most energetic human made neutrinos.



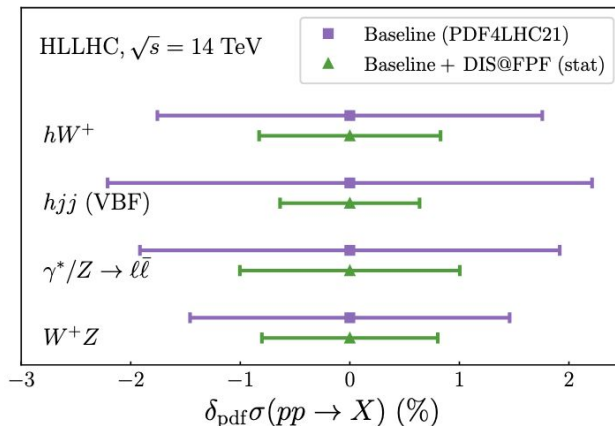
Thousands of tau neutrinos: tau neutrino precision studies.

Test of lepton flavor universality via neutrino scattering.

FPF Science: QCD and Proton Structure.



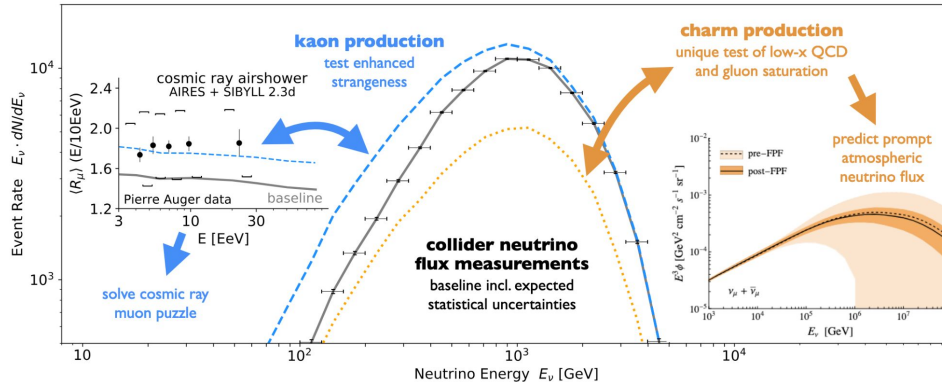
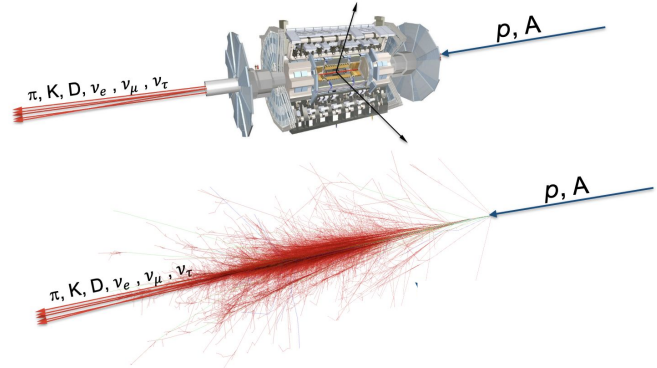
Forward neutrino fluxes from charm decay have unique sensitivity to very low x PDFs:
 $x \sim (2m_c)^2/s \sim 10^{-6}$.



FPF as *neutrino ion collider*:
 Neutrino DIS measurements to reduce PDF uncertainties, break PDF/BSM degeneracies.

FPF Science: Astroparticle.

Forward neutrino measurements at LHC probe and improve hadronic interaction models used in astroparticle physics.



Input to address cosmic ray muon puzzle and prompt atmospheric neutrino fluxes.

We already submitted a
~25 page science and
project planning document
to arXiv. [[2411.04175](https://arxiv.org/abs/2411.04175)]

Summary on Science, Facility,
Experiments, Cost, Timeline, ...

We just had FPF8, where we
discussed the EPPSU input.

Editor group was formed.

Input / suggestions / feedback
are always welcome. If you are interested,
please get in contact with us :)



arXiv:2411.04175v1 [hep-ex] 6 Nov 2024

SCIENCE AND PROJECT PLANNING FOR THE FORWARD PHYSICS FACILITY IN PREPARATION FOR THE 2024–2026 EUROPEAN PARTICLE PHYSICS STRATEGY UPDATE

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The recent direct detection of neutrinos at the LHC has opened a new window on high-energy particle physics and highlighted the potential of forward physics for groundbreaking discoveries. In the last year, the physics case for forward physics has continued to grow, and there has been extensive work on defining the Forward Physics Facility and its experiments to realize this physics potential in a timely and cost-effective manner. Following a 2-page Executive Summary, we present the status of the FPF, beginning with the FPF's unique potential to shed light on dark matter, new particles, neutrino physics, QCD, and astroparticle physics. We summarize the current design for the Facility and its experiments, FASER2, FASERb2, FORMOSA, and FLArE, and conclude by discussing international partnerships and organization, and the FPF's schedule, budget, and technical coordination.