



Contribution ID: 47

Type: **not specified**

BSM and SM signals and backgrounds in Far-Forward Experiments at the LHC

Wednesday, 28 September 2022 14:55 (25 minutes)

Two far-forward experiments are currently taking data during Run 3 at the Large Hadron Collider (LHC): FASERnu [1] and SND@LHC [2]. They are sensitive to some classes of BSM particles, muons and neutrinos produced in the ATLAS interaction point (IP) and propagating for several hundred meters along the tangent to the accelerator beamline, up to two caverns located in opposite directions with respect to the IP, respectively. Proposals are being prepared to extend these experiments to bigger ones during the HL-LHC phase. One of the possibilities under discussion is to build a Forward Physics Facility (FPF) capable of hosting a number of different far-forward experiments. In this talk I will discuss BSM and SM signals and backgrounds at the FPF, using as a basis two extended papers produced so far on the topic [3,4] to which various participants e/o conveners of this Workshop have contributed, plus other ones closely related, and further work in progress. I will also sketch the possibility for alternatives and complementary experiments. I will mainly focus on QCD-related aspects, considering the main interests of the audience of this Workshop.

[1] FASER Collaboration, “Technical Proposal: FASERnu”, [arXiv:2001.03073].

[2] SHIP Collaboration, “SND@LHC”, [arXiv:2002.08722].

[3] L.A. Anchordoqui et al. “The Forward Physics Facility: Sites, experiments and physics potential”, Phys. Rept. 968 (2022), 1-50 [arXiv:2109.10905].

[4] J.L. Feng et al. “The Forward Physics Facility at the High-Luminosity LHC”, to be published in Journal of Physics G: Nuclear and Particle Physics [arXiv:2203.05090].

Presenters: GARZELLI, Maria Vittoria (INFN, Italia & Universidad de Granada, Espana); GARZELLI, Maria Vittoria

Session Classification: Joint session: Recent theoretical results on QCD and saturation + low x, PDFs and hadronic final state

Track Classification: Joint track: Recent theoretical results on QCD and saturation + low x, PDFs and hadronic final state