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Flavours at a high luminosity e+e- collider (FCC-ee)

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A possible long-term strategy for high-energy physics at colliders considers a tunnel of about 100 km circumference, which takes advantage of the present CERN accelerator complex.A possible first step of the project is high-luminosity e^+e^- collider aimed at studying comprehensively the electroweak scale with centre-of-mass energies ranging from the Z pole up to beyond the $t\bar{t}$ production threshold. A 100 TeV pp collider is considered as the ultimate goal of the project. FCC groups have been formed in a design study hosted by CERN, aiming at a CDR in time for next European Strategy milestone (2018-2019). The unprecedented statistics at the Z pole ($O(10^{12-13})$ Z decays potentially delivered by the e^+e^- collider can be studied in particular to explore further the Flavour Physics case at large. We'll discuss the possible measurements of rare decays of b-hadrons, which can complement the anticipated knowledge from the foreseen b-Physics programs. This very statistics can be used as well to study Lepton Flavour Violating Z decays, which would serve as an indisputable evidence for New Physics if seen. In absence of signal, we'll discuss the constraints to be set on models embedding additional right-handed sterile neutrinos. Heavy sterile neutrinos, addressing in some models both the questions of dark matter and baryonic asymmetry in the Universe, can also be searched for directly at FCC-ee. Prospects of these direct searches will be described.

additional information

Included on behalf of the FCC-ee Physics coordination.

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