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FORESEE: FORward Experiment SEnsitivity Estimator for the LHC and future hadron colliders

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During the upcoming Run 3, a new experimental program will be initiated at the LHC in its far-forward region that will focus on the search for highly-displaced decays of light unstable BSM particles in the FASER detector and on studying interactions of high-energy neutrinos in the FASERnu and SND@LHC experiments. To fully exploit the relevant physics potential, the experimental efforts should be supplemented with a comprehensive program of theoretical and phenomenological studies. To facilitate this, in the talk, we will introduce a numerical package, namely the FORward Experiment SEnsitivity Estimator, or FORESEE, which could be used to obtain the expected sensitivity reach for BSM models in various far-forward experiments. We will also comment on the similar prospects for the far-forward BSM searches in the future HE-LHC, SppC, and FCC-hh hadron colliders.

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