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Particle Physics at LPTHE

Mardi 23 Janvier 2024, 14 :00
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Domaines : hep-ph

Titre : *String Derived Z' ; Model at an Upgraded Superconducting Super Collider*

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Résumé : *The future of collider physics is under investigation. With the High Luminosity LHC program lasting until the late 2030s, the next machine in the energy frontier is envisioned to appear in 30–40 years, which may be too far into the future to sustain the field. In this paper we explore the physics potential of an Upgraded Superconducting Super Collider (USSC). The Original Superconducting Super Collider (OSSC) was planned to operate at 20TeV beam energy, and with improved magnet technology and/or longer tunnel, one may envision that it can be extended to 25–30 TeV beam energy. Given that the decision on the OSSC construction took place in Autumn 1988 and it was planned to start operation in the 1996-1999 period, an USSC can be constructed 10–15 years from decision and fill the gap between the end of HL–LHC and the future envisioned machines. While the main mission of the USSC will be to test the Standard Model and its electroweak and strongly interacting sectors, as a specific example we illustrate the invariant mass distribution at NNLO in QCD for a 5 TeV Z' in the string derived Z' model.*