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CERN Strategy and Future Large Scale Projects

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The highest CERN priority for the next 20 years is the full exploitation of the Large Hadron Collider and its high-luminosity upgrade (HL-LHC). In preparation for the post-LHC era, the Future Circular Collider (FCC) study develops the design of a 100-TeV c.m. proton-proton collider (FCC-hh), based on 16-T Nb₃Sn magnets, a new 100-km tunnel infrastructure, and, possibly, crystal collimators. The FCC study is also designing a high-luminosity e⁺e⁻ collider in the same large tunnel (FCC-ee, formerly TLEP), serving as Z, W, Higgs and top factory, as a potential intermediate step. In addition, a proton-lepton option (FCC-he) is being explored. Other large-scale accelerator projects considered around the world include ILC in Japan, CLIC, CepC/SppC in China, and US proposals of an even larger hadron collider. Several possible scenarios and alternative evolutions of the CERN complex over the next 100 years are described.

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