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Options for Very High Energy

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The future of highest-energy accelerators for particle physics is reviewed. The energy of hadron colliders can be pushed beyond the presently operating Large Hadron Collider (LHC) at CERN, by raising the field of the bending magnets and/or by increasing the ring circumference. Proposed higher- and highest-energy lepton colliders include large circular electron-positron colliders, more compact circular muon colliders, and linear electron-positron colliders, the latter being based on normal- or superconducting microwave linac technology, with accelerating gradients of 30-100 MV/m, and, possibly, in the longer-term future, on more advanced dielectric, plasma or crystal accelerators, with acceleration gradients of 1-100 GV/m. High-energy photon and lepton-hadron colliders complete the picture. The strategy for future collider projects will be influenced by the results of the LHC. The 2012 discovery by the LHC's ATLAS and CMS experiments of a boson with a mass around 125 GeV focuses present attention on concepts for Higgs factories. Such a Higgs factory could also be the initial stage of a higher-energy machine. Merits, challenges, ultimate limits, and synergies of the various collider approaches are discussed, and a possible master plan for the next 50-100 years is presented.