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HALHF: Current Status, Optimisation, and Future Plans

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The HALHF concept utilises beam-driven plasma-wakefield acceleration to accelerate electrons to very high energy and collide them with much lower-energy positrons accelerated in a conventional RF linac. This idea, which avoids difficulties in the plasma acceleration of positrons, has been used to design a Higgs factory that is much smaller, cheaper, and greener than any based solely on radio-frequency technology. The talk will outline the original HALHF design, discuss challenges to that design put forth by the HALHF collaboration and wider community, and highlight the optimisation process pursued to solve these challenges. Finally the current status of the design—including possible evolution in several parameters—and plans for the next steps towards a pre-Conceptual Design Report and the next ESPP Update will be given.

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