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## **HALHF: a hybrid, asymmetric, linear Higgs factory using plasma- and RF-based acceleration**

HALHF is a hybrid linear collider that uses electron-driven plasma-wakefield acceleration to accelerate electrons to high energy while using radio-frequency cavity technology to accelerate positrons. The most cost-effective solution collides low-energy positrons with high-energy electrons, producing a boost to the final state in the electron direction with  $\gamma = 1.67$ . The current HALHF baseline design produces a luminosity comparable to that of the baseline ILC but with a greatly reduced construction and carbon footprint and hence much lower cost than the mature linear-collider designs ILC and CLIC. Costs for HALHF are evaluated, together with that for the approximate 15-year R&D programme necessary to realise HALHF. Time scales and cost for the R&D are estimated. Upgrade paths for HALHF technology from a 250 GeV Higgs factory, through 380 and 550 GeV, up to 10 TeV are sketched.

**Authors:** FOSTER, Brian (University of Oxford (GB)); Dr LINDSTRØM, Carl A. (University of Oslo (NO)); D'ARCY, Richard (University of Oxford)