

Collider design issues based on proton-driven plasma wakefield acceleration

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Simulation shows that the plasma wakefield driven by a high energy proton bunch can accelerate a bunch of electrons to the energy frontier (TeV) in a single stage of acceleration. It therefore offers us a novel solution to design a collider (either an electron-positron collider or an electron-proton collider) using the existing high-energy proton machines, e.g. SPS or the LHC at CERN. This talk will discuss some key issues, e.g. the luminosity, COM energy, phase slippage, positron acceleration in designing the future colliders based at the CERN accelerator infrastructure.

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