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A PWFA Multi-TeV gamma-gamma collider

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The plasma wakefield accelerator has demonstrated high-gradient, high-efficiency acceleration of an electron beam. Numerical simulation results backed by theory indicate that also emittance preservation at the level needed for a high luminosity collider may be achievable in the blow out regime. Electron linacs based on plasma wakefield acceleration is therefore a promising technology for a compact future linear collider. However, there are currently no evident solutions for achieving the same performance for positron acceleration. Instead, two Multi-TeV electron linacs may be used to produce Multi-TeV gamma-gamma collisions. We discuss the option of a Multi-TeV gamma-gamma collider, including a brief look at the physics potential.

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