

## ENERGY DOUBLING IN A PLASMA WAKEFIELD ACCELERATOR

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### Abstract

In the experiment E-167 at SLAC, the compressed electron pulse from the linac traverses a lithium vapor column and creates a plasma wake, which accelerates and focuses particles in the back of the pulse. Recent experimental results show that these fields can be sustained for 85 cm, increasing the particle energy from 42 GeV to 80 GeV. Plasma electrons can be trapped in the accelerating wake, resulting in ultra-short bunches with a relatively narrow energy spread and a small divergence angle. The results agree with three-dimensional particle-in-cell simulations.

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