

## Recent results from beam-driven plasma acceleration experiments at FACET

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The field of beam-driven plasma wakefield acceleration has recently seen a rapid experimental progress, in particular with the last few years of running of the FACET facility at SLAC. We present key results recently obtained at FACET. First, the acceleration of a distinct trailing bunch of electrons, at high fields, with high energy efficiency and low energy spread, was demonstrated. Positron behave very differently than electrons in the non-linear blow-out regime studied at FACET. In the experiments, a new regime for positron acceleration, where energy is efficiently transferred from the front to the rear within a single positron bunch was discovered. The self-loading of the wake leads to the formation of a narrow energy spread bunch of the positron bunch.

### Summary

We present recent result from beam-driven plasma acceleration experiments at FACET. Both electron acceleration and positron acceleration are discussed.

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