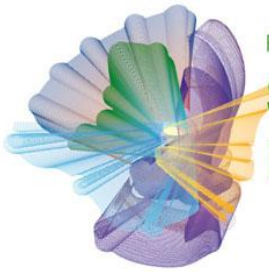

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Particle Driven Wakefields in Plasmas

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Abstract:

Experiments with electron-driven wakefields in plasmas have accelerated electrons with fields greater than 50GeV/m over meter scale distances. The peak amplitude of the plasma wake can be larger still, producing other phenomena such as trapped plasma electrons or ion motion. In a plasma wakefield accelerator, these fields are utilized to produce a high energy beam over very short distances. Potential applications are drastically smaller TeV linear colliders or GeV scale light sources. Plasmas may also be used to couple the large amount of stored energy in a proton beam to a trailing electron beam to produce 100's of GeV electrons on the scales of a few hundred meters. This talk will survey the current state of the field, discuss the near term experimental opportunities and illustrate a few potential applications.