Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, September 26, 2006

(16:00 in Room 459/30b)

Electron Acceleration by 43 GeV in a Plasma Wakefield Accelerator

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Abstract

LHC and ILC will extend the energy frontier of particle physics into the TeV range. Considering the investments into these colliders and the time scales to their completion, it is important to explore new ways to accelerate particles. Plasma wakefield accelerators are particularly attractive because they support accelerating fields of 50 GV/m. It is important to show that these fields can be sustained over a substantial length to achieve a significant energy gain.

Beam–driven plasma wakefield acceleration experiments are carried out in the Final Focus Test Beam line at the Stanford Linear Accelerator Center. The sub–picosecond ultra–relativistic electron bunches field–ionize lithium vapor and create a wake in this plasma. Results from recent runs will be shown, including plasma acceleration in a meter–scale plasma.

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