Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Update on the Experimental Study of Current Filamentation Instability[1] BRIAN ALLEN, PATRIC MUGGLI, University of Southern California, JOANA MARTINS, LUIS SILVA, Instituto Superior Técnico, VITALY YAKIMENKO, MIKHAIL FEDURIN, KARL KUSCHE, MARCUS BABZIEN, Brookhaven National Laboratory, CHENGKUN HUANG, Los Alamos National Laboratory, WARREN MORI, University of California at Los Angeles Los Angeles — Current Filamentation Instability (CFI) is of central importance for propagation of relativistic electron beams in plasmas. CFI has potential relevance to astrophysics, magnetic field/radiation generation in afterglow of gamma ray bursts, and inertial confinement fusion, energy transport in fast-igniter concept. An experiment is underway at Accelerator Test Facility at BNL with 60MeV electron beam and capillary discharge plasma. The goal is to conduct a systematic study and characterize CFI as function of beam (charge, transverse and longitudinal profile) and plasma (plasma density) parameters. The transverse beam profile is measured directly at the plasma exit with OTR from a gold-coated silicon window. Initial experimental results show reduction of the beam transverse size with the appearance of multiple beam filaments and the size and number of individual filaments depend on the plasma density. We will present early experimental results and outline next steps.

[1]Work supported by NSF and US DOE

Brian Allen
University of Southern California

Date submitted: 26 Jul 2011 Electronic form version 1.4