Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

**Cooperative elliptical instability and plasma blob generation** P. MANZ, M. XU, N. FEDORCZAK, S.H. MÜLLER, S.C. THAKUR, G.R. TYNAN, Center for Momentum Transport and Flow Organization, Center for Energy Research, University of California at San Diego, J. H. YU, Center for Energy Research, University of California at San Diego — In previous investigations it was found that an $m = 1$ poloidal mode number inside the main plasma column give rise to high-intensity bursts in CSDX. This behavior is also typical for other linear devices, e.g. VINETA and LAPD. Because of the $E \times B$ drift every perturbation in the potential results in a vortex. An $m = 1$ mode in the potential consists of a negative and positive perturbation, which are vortices rotating in opposite directions and therefore an $m = 1$ mode is a counterrotating vortex pair. From fluid mechanics it is known that counter-rotating vortex pairs are subject to the elliptic instability, which is a three-dimensional instability of a two-dimensional flow. This instability can modify the internal structure of the vortex core leading to injection of smaller vortices, which could be a generation mechanism for plasma blobs. Using fast camera measurements first evidence of the existence of the cooperative elliptic instability in magnetized plasmas can be provided.

Peter Manz

Date submitted: 14 Jul 2011 Electronic form version 1.4