Scaling of spontaneous edge plasma rotation in the Large Plasma Device
MILO TAYLOR, Berry College, TROY CARTER, University of California:
Los Angeles — Spontaneous cross-field rotation is measured in the edge plasma of
the Large Plasma Device at UCLA. A spatially-broad mean flow in the ion diamag-
netic drift direction is observed near the edge of the cathode source region. Shearing
associated with this flow appears to modify edge turbulence and create a weak
particle transport barrier. Multiple flow measurements have been made in LAPD
using different techniques such as Mach probe, \( \mathbf{E} \times \mathbf{B} \) from plasma potential mea-
surements, and time-delay estimation using both Langmuir probe and fast-framing
camera images of visible light emission. A comparison between these measurement
techniques and how the cross-field flow in LAPD scales with plasma parameters such
as magnetic field, discharge current, and fill pressure is demonstrated.

Milo Taylor
Berry College

Date submitted: 12 Jul 2012

Electronic form version 1.4