

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Measurements of Turbulent Transport of Fast Ions¹ SHU ZHOU, HEINRICH BOEHMER, WILLIAM HEIDBRINK, ROGER MCWILLIAMS, TROY CATER, PAVEL POPOVICH, SHREEKRISHNA TRIPATHI, STEVE VINCENA, University of California, Irvine — Due to gyroradius averaging and drift-orbit averaging, the transport of fast ions by microturbulence is often smaller than for thermal ions. In this experiment, spatial transport of lithium fast ions [1] with gyroradii of 5.9 cm is studied in the LArge Plasma Device (LAPD). The baseline condition is a uniform quiet plasma; in the comparison condition, the cylindrical plasma column is compressed so the helical fast-ion orbits pass through the turbulent edge region (broadband drift-wave fluctuations with density fluctuations of $\sim 20\%$) The fast-ion energy and pitch are varied to study drift averaging. Initial observations indicate that changes in parallel energy are more evident than radial transport. Measurements of the fluctuations by triple, swept Langmuir, and B-dot probes are compared with two-fluid simulations by the BOUT code. Calculations of the expected fast-ion transport in the simulated turbulence will be compared with the experimental profiles.

[1] Y. Zhang et al. , Rev. Sci. Instrum. 78, 013302 (2007).

¹Supported by U.S. DoE.

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Date submitted: 18 Jul 2009

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