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**Experiment to measure fast ion transport by magnetic fluctuations** ADAM PREIWISCH, WILLIAM HEIDBRINK, HEINZ BOEHMER, ROGER MCWILLIAMS, Department of Physics and Astronomy, University of California, Irvine, California, TROY CARTER, WALTER GEKELMAN, SHREEKRISHNA TRIPATHI, BART VAN COMPERNOLLE, STEVE VINCENA, Department of Physics and Astronomy, University of California, Los Angeles, California
— Fast ion transport in a linear magnetic field is studied at the upgraded Large Plasma Device. Recent developments allow for the generation of turbulent magnetic flux ropes, produced by a hot LaB6 cathode situated in the main chamber.[1] A large-gyroradius, energetic lithium ion beam ($300 \leq E_{fast} / T_i \leq 1000$) is passed through the turbulent region and collected by a collimated analyzer downstream, yielding a detailed plane profile of the fast ion distribution.[2] Magnetic fluctuations, density, and temperature profiles are also obtained via probes. Enhanced fast-ion transport is clearly observed in the form of beam broadening. Early analysis shows broadband ion saturation current and magnetic fluctuations attributed to the flux ropes. A follow up experiment is currently under way to address whether the increased transport is primarily attributed to magnetic fields, associated electric fields, or increased Coulomb scattering.

Adam Preiwisch
University of California, Irvine

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