

**Abstract Submitted for the Forty-Eighth Annual Meeting
Division of Plasma Physics
October 30th-November 3, 2006, Philadelphia, Pennsylvania**

Category Number and Subject:

Theory Experiment

Fast Ion Profiles in Plasmas With Alfvén Instabilities,* W.W. Heidbrink, Y. Luo, E. Ruskov, *U. California-Irvine*, G.J. Kramer, N.N. Gorelenkov, R. Nazikian, R. White, *Princeton Plasma Physics Laboratory*, M.A. Van Zeeland, *Oak Ridge Institute for Science Education* – Fast-ion redistribution is observed in plasmas with many different types of Alfvén eigenmode (AE) activity: toroidicity-induced (TAE), reversed shear (RSAE), elongation induced (EAE), and beta-induced (BAE). AE wave fields calculated by the NOVA code and benchmarked against experimental measurements are used to predict the modification of the fast-ion distribution function. These predictions are compared with profiles measured by the fast-ion D_α diagnostic, as well as fast-ion profiles inferred from the equilibrium. Neutron, neutral particle, and beam-ion loss detector diagnostics are also employed. In cases with strong AE activity, the central fast-ion profile is often flat.

*Work supported by U.S. DOE under SC-G903402, DE-FC02-04ER54698, DE-AC02-76XH03073, and DE-AC05-76OR00033.