Abstract Submitted for the 56th Annual Meeting
Division of Plasma Physics
October 27–31, 2014
New Orleans, Louisiana

Category Number and Subject:

[ ] Theory [X] Experiment

Experiments to Understand and Control Energetic Particle Transport by Alfven Eigenmodes,* W.W. Heidbrink, C. Collins *UC Irvine*; D.C. Pace, M.A. Van Zeeland, *General Atomics;* C.T. Holcomb, *LLNL* –Alfvén eigenmodes (AE) cause appreciable fast-ion transport in both steady-state scenario and in L-mode current ramp plasmas. All fast-ion diagnostics that are sensitive to a populated portion of phase space observe reductions in signal relative to classical predictions in the presence of many, small-amplitude AEs. Theory indicates that the many wave-particle resonances in these plasmas results in stochastic transport and critical gradient behavior. Initial data from a modulation experiment is consistent with the hypothesis that the fast-ion transport becomes "stiff." Another experiment investigates whether AE-induced transport from the core couples with edge losses induced by test-blanket module fields to enhance localized heating. Application of electron cyclotron heating to control the AEs gives mixed results: AEs are sometimes stabilized but the dependence on the fast-ion and q profiles is complex

*Work supported by the US Department of Energy under SC-G903402, DE-FC02-04ER54698 and AC52-07NA27344.