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Theory Experiment

New Measurements of Fast-ion Transport,* W.W. Heidbrink, C.M. Muscatello, D.C. Pace, Y.B. Zhu, *UC Irvine*; M.A. Van Zeeland, R.K. Fisher, *GA*; W.M. Solomon, *PPPL*; M. García-Muñoz, *IPP Garching* — Many new fast-ion diagnostics were commissioned during the 2010 campaign, including a scintillator-based fast-ion loss detector, high bandwidth neutral-particle analyzers and fast-ion D_α (FIDA) detectors, spectroscopic FIDA views that are sensitive to co-passing ions, and improved FIDA imaging capabilities. Fluctuations at mode frequencies are detected during Alfvén eigenmodes, neoclassical tearing modes, energetic-particle driven geodesic acoustic modes, and $q=2$ fishbones. The transport of passing and trapped ions differ at the sawtooth crash. Drift-wave transport is more evident in lower-energy channels than in higher-energy channels. High time resolution toroidal rotation measurements detect local sub-millisecond changes associated with non-ambipolar fast-ion transport.

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