

Abstract Submitted
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Sawtooth-induced Fast-ion Transport in the DIII-D Tokamak: Observations and Comparison to Theory¹ C.M. MUSCATELLO, W.W. HEIDBRINK, D.C. PACE, Y.B. ZHU, UC-Irvine, YA.I. KOLESNICHENKO, V.V. LUTSENKO, YU.V. YAKOVENKO, Institute for Nuclear Research, M.A. VAN ZEE-
LAND, R.K. FISHER, General Atomics, B.J. TOBIAS, UC-Davis — Tokamak sawteeth consist of a reorganization of the plasma magnetic field and various plasma parameters. The extent to which the fast-ion distribution function $F(x, v)$ is influenced can depend on the ions' distribution of pitch and energy as well as the nature of the crash. Recent sawtooth experiments at DIII-D employed the newly extended fast-ion deuterium-alpha (FIDA) diagnostic, 2D FIDA imaging, and the newly commissioned fast-ion loss detector. Consistent with theoretical predictions, the FIDA diagnostic indicates that passing particles are more strongly affected by a sawtooth crash than the trapped population. Furthermore, FIDA imaging reports a depletion of up to 50% of the central fast-ion density. Extensive experimental data provide a rigorous test bed of theoretical models.

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