

Abstract Submitted
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Propagation of Soliton-like density pulses following pellet injection in DIII-D H-mode Plasmas¹ LARRY BAYLOR, JEFF HERFINDAL, DAISUKE SHIRAKI, Oak Ridge National Laboratory, PAUL PARKS, General Atomics — Pellet fueling from the high field side of tokamaks has been shown to effectively fuel H-mode plasmas and is planned for fueling in ITER. New observations have been made on DIII-D of pellet ablation striations from HFS injected pellets leading to density pulses with soliton like structure propagating along field lines in both directions from the ablation location. The pulses are observed in the interferometer chordal signals with high time resolution and are not expected from hydrodynamic simulations of pellet cloud expansion and ExB polarization drifts. The density pulses are observed to persist for as many as 5 toroidal revolutions and accelerate, consistent with the ion sound speed of the cloud being reheated during the expansion. When large ELMs are triggered by the pellets the density pulses are only observable by chords passing through the HFS. Observation details are presented and implications for refining deposition models and the fueling of large burning plasmas are discussed.

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