Abstract Submitted
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Alfvén Cascade modes in NSTX: fast-ion transport and MHD spectroscopy[1] N.A. CROCKER, UCLA, E.D. FREDRICKSON, N.N. GORELENKOV, PPPL, W.W. HEIDBRINK, UCI, G.J. KRAMER, R.E. BELL, D. DARROW, J. HOSEA, PPPL, S. KUBOTA, UCLA, B.P. LEBLANC, PPPL, K.C. LEE, UCD, F.M. LEVINTON, Nova Photonics, J.E. MENARD, PPPL, M. PODESTA, UCI, G. TAYLOR, PPPL, H. YUH, Nova Photonics, NSTX TEAM — Alfvén Cascades (AC) occur in reverse shear plasmas and can transport fast-ions (e.g. fusion α's, beam ions or RF-accelerated ions), impacting plasma performance. This transport is studied with neutral particle analyzers, a scintillator fast lost ion probe and a fast-ion D alpha (FIDA) spectrometer. AC structure measurements via reflectometery and interferometery, in conjunction with structure calculations by the NOVA-K eigenmode code and orbit calculations by the ORBIT code, are employed to study how ACs transport fast-ions. ACs also enable MHD spectroscopy, the determination of q_{min} from AC frequency. In spherical tori, this requires understanding the influence of acoustic coupling and pressure gradients on AC frequency, which is studied by changing species (He and D) and density (0.5 – 1.5 x 10^{19} m^{-3}), and modifying T_e with high harmonic fast wave heating. Comparisons are made with NOVA-K.

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