Abstract Submitted
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Mirror-induced Alfvén Eigenmodes (MAE) in Periodic Magnetic Mirror Geometry[1] YANG ZHANG, HEINZ BOEHMER, WILLIAM HEIDBRINK, ROGER MCWILLIAMS, UC Irvine, TROY CARTER, STEPHEN VINCENA, BRIAN BRUGMAN, DAVID LENEMAN, WALTER GEKELMAN, UCLA, BORIS BREIZMAN, UT Austin, UC IRVINE TEAM, UCLA TEAM, UT AUSTIN COLLABORATION — Waves in a periodic medium (optical Floquet-Bloch waves in dielectric gratings, electron wavefunctions in a 1D solid-state lattice, etc.) have propagation gaps in frequency. The famous Toroidicity-induced Alfvén Eigenmodes (TAE) are also caused by toroidal and poloidal periodicities. As part of the fast-ion campaign in the LArge Plasma Device (LAPD), the magnetic field profile was modulated spatially into a mirror array (4 to 5 mirror throats separated by $\sim$ 4 m) to study Mirror-induced Alfvén Eigenmodes (MAE) and the associated frequency gap. In a typical Helium plasma in LAPD, modulated sine waves and impulsive bursts drive Shear Alfvén Waves (SAW) ($\lambda_{//} \sim 1$ m, f $\sim$ 300 kHz, δ B/B $\sim 0.1\%$) through antennae including a field-aligned copper cylinder (disk) and a picture-frame loop. The observed frequency spectra for a variety of mirror configurations and boundary conditions are compared with the predictions of the MHD model.

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Yang Zhang
UC Irvine

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