

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Volumetric nature of synchronization of the dust acoustic wave with an external modulation¹ JEREMIAH WILLIAMS, Wittenberg University — The dust acoustic wave (also known as the dust density wave) is low-frequency, longitudinal mode that propagates through the dust component of the dusty plasma system and is self-excited by the free energy from the ion streaming through the dust component. In the laboratory setting, the majority of the self excited dust acoustic waves that are observed are nonlinear, which allows for detailed studies of the nonlinear properties of this wave mode at the kinetic level. One such nonlinear process is synchronization, which is observed when the self-excited dust acoustic wave mode couples with and adjusts to an externally applied modulation. In this poster, we will present volumetric measurements of naturally occurring dust acoustic waves in an rf discharge as it becomes synchronous with an externally applied modulation in the spatial and temporal domains by applying a time-resolved Hilbert Transform to high-speed video imaging of the wave mode over a range of experimental conditions.

¹This work is supported by US National Science Foundation through Grant No. PHY-1615420

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Date submitted: 13 Jul 2017

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