

Abstract Submitted
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The Ion Wakefield Inside a Glass Box.¹ MUDI CHEN, LORIN MATTHEWS, TRUELL HYDE, CASPER, Baylor University — The formation of an ion wakefield downstream of dust particles in a complex plasma sheath has long been understood to have strong implications on their structure, stability and dynamics . The presence of the ion wake introduces interesting phenomena such as charge reduction on downstream particles and asymmetric interaction forces between upstream and downstream particles. Many of the self-ordered dust particle structures observed in complex plasma experiments are the result of the combination of the ion-wakefield and the external confinement; unfortunately, few experimental measurements isolating the effect of the wakefield have been conducted. In this experiment, 1-D dust particle structures (i.e., vertically aligned particle chains) are formed in a GEC RF reference cell within a glass box sitting on the powered lower electrode. A diode pumped, solid-state laser is used to perturb individual particles within the particle chain, allowing a map of the ion wakefield inside the glass box to be generated. The implications of these results will be discussed.

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