The Ion Wakefield Inside a Glass Box.\textsuperscript{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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