

Abstract Submitted  
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**Charging and interaction of two-particle system within a glass box immersed in a low-vacuum argon plasma**<sup>1</sup> MICHAEL HOFF, University of Dallas, BAYLOR CASPER COLLABORATION — Due to Debye screening, the interaction between charged dust particles within a plasma may not be considered as a simple Coulomb force. In order to observe particle interaction, the top particle in a vertical, two-particle chain is pushed from its equilibrium position using a high-power Verdi laser, and as it returns to equilibrium will interact with the second particle. In order to isolate the particle interaction force, the electrostatic force and neutral drag force are subtracted from the net force acting on the particle by using a single particle undergoing damped oscillations in the box as a reference. The net electric field and drag force within the glass box are examined by forcing damped oscillations of a single particle, in the vertical direction by an applied DC bias between electrodes and in the horizontal direction by laser-pushing. It is found that in both the horizontal and vertical dimensions the electric field depends linearly on the particle's distance from its equilibrium position, and the linear coefficient to describe the field in turn has a linear dependence on plasma power. After isolating the particle-particle interaction force, what is expected to be an equal and opposite interaction force between the particles is instead found to be asymmetric, and possible causes for this are discussed.

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