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Dust Particle Charge in Complex Plasma Experiments ANGELA DOUGLASS, VICTOR LAND, KE QIAO, LORIN MATTHEWS, TRUPELL HYDE, CASPER - Baylor University — A self-consistent fluid model which includes effects due to increasing ion flow speed and electron depletion near the powered electrode was used to obtain representative plasma parameters throughout the plasma in a GEC radio-frequency discharge cell. Employing these parameters in the dust charging equation, the dust charge as a function of height above the powered electrode was calculated. The results obtained are used to explain previous, seemingly contradictory data recently presented in the literature as well as results from recent experiments conducted in the CASPER GEC cell. The shape of the electric force is also investigated experimentally and compared to the model. Finally, the maximum and minimum levitation height for charged dust particles within the GEC cell will be discussed.

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