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Controlled Photo-Discharging of Dust in a Complex Plasma¹ MICHAEL MCKINLAY, EDWARD THOMAS, JR., Auburn University — Photoelectric charging of dust particles in a plasma has previously been investigated in very low pressure experiments in the past and is the primary charging mechanism in astronomical dusty plasmas. However, photoelectric charging of dust in low-temperature laboratory plasmas is difficult due to the high work functions and poor photoelectron yields of most conventional dust materials (like silica) and the substantially larger particle (ion/electron) fluxes onto the dust in laboratory LTPs compared to space plasmas. A new experiment at Auburn University utilizes lanthanum boride (LaB6) powder and a high intensity UV source to investigate whether controlled photo-discharging of dust particles can be achieved in a weakly ionized, argon, DC glow discharge and whether it can be accomplished with minimal perturbation to the background plasma. Data extracted from dust videos and Langmuir probe data are presented with theoretical models of charging effects.

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