

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Dust void formation within magnetized dusty plasmas¹ SPENCER LEBLANC, EDWARD THOMAS, Auburn University — Dust-free regions (dust voids) within complex plasmas have been observed and studied in a wide variety of complex plasma environments and parameter regimes, including dust monolayers, microgravity systems, and three-dimensional earth-based dust clouds. Often formed by a local concentration and transport of charge within the plasma bulk, the charged dust particles can be used as a diagnostic tool to visualize the void region in the plasma. Consequently, measurements and analysis of the dust particle confinement in the region of the void can reveal detailed information about the background plasma system. At Auburn University's Magnetized Plasma Research Laboratory (MPRL), dust voids have been investigated in plasmas under varying degrees of ion magnetization, yielding new insight into the dust-charging processes, and the ion drag (or ion wind) force on dust grains, as well as the influence of external magnetic fields applied to these phenomena. Experimental measurements of the voids under a variety of magnetic field configurations and their connection to underlying ion dynamics are presented.

¹This work is supported with funding from the NSF/DOE Partnership in Basic Plasma Science and Engineering (DE - SC0016330)

Spencer LeBlanc
Auburn University

Date submitted: 03 Jul 2019

Electronic form version 1.4