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Using Dust Particle Clusters as Probes for Mapping Trapping Potentials in Complex Plasmas BO ZHANG, JIE KONG, LORIN MATTHEWS, TRUELL HYDE, CASPER - Baylor University — Dust particle clusters often manifest interesting phenomena when externally driven inside a complex plasma. Double vortices, structural phase transitions and aligned string structures have all been observed within the central region of such clusters. This paper examines whether dust particle clusters can be used as in-situ probes for investigating the trapping potential of the external confinement (driving) field within a rf discharge plasma in argon. The experiments to be discussed, were conducted inside a transparent, conductive, indium tin oxide (ITO) glass box with the walls of the box biased positively and negatively. By switching the biasing potential on and off while maintaining constant rf power, the morphology of the dust cloud can be analyzed providing insight on the topology of the trapping potential inside the ITO box.

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