

Abstract Submitted
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Experimental Program to Study Centrifugal Rotation in Highly Magnetized Hydrogen Plasmas and in Dusty Plasmas¹ C. A. ROMERO-TALAMAS, N. J. ESCHBACH, J. N. STEFANCIK, K. N. FROST, J. M. DRUMMOND, A. J. CHEN, B. TSAO, University of Maryland, Baltimore County — Experimental plans and preliminary diagnostic results for a new high-field electromagnet facility under construction at UMBC are presented. The magnet, called Adjustable Long Pulse High-Field Apparatus (ALPHA), is a Bitter-type electromagnet designed to deliver up to 10-T in a 15-cm bore for more than 10 seconds. ALPHA is being constructed to accommodate two magnetic configurations: i) continuous stacking, which will allow for the highest steady state magnetic field for dusty plasma experiments; ii) irregular stacking, which will allow for a mirror field configuration to study the Critical Ionization Velocity (CIV) in plasmas with imposed $E \times B$ rotation (where E is the radial electric field, and B the axial magnetic field). The two configurations will use a cylindrical glass chamber, but with different inner electrode arrangements and diagnostics. The dusty plasma configuration will include a dust dispenser with high reproducibility, a dust collector to retrieve samples between experiments while keeping high vacuum, and periscopes for dust imaging during experiments. The CIV configuration will include a center conductor and a metal liner to impose an E -field through an external high voltage capacitor bank, and periscopes for plasma spectroscopy.

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