Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

The Dust Accelerator Facility at CCLDAS ANTHONY SHU, A. COLLETTE, R. COSENTINO, K. DRAKE, N. DUNCAN, M. HORANYI, S. LEBLAN, T. MUNSAT, P. NORTHWAY, S. ROBERTSON, Z. STERNOVSKY, E. THOMAS, M. WAGNER, T. WINGFIELD, Univ. Colorado, E. GRUN, R. SRAMA, MPIK, CCLDAS TEAM[1] — The lunar surface is continually bombarded with micrometeorites, primarily within the 0.1-1 μm and $<$ 100 km/s range. The impacts of such particles at the lunar surface introduce significant potential hazards to humans and instruments, but also create a scientifically rich complex system. Upon impact into the lunar regolith, cratering and micro-plasma creation can lead to liberation of many types of materials into the charged lunar dusty plasma. To address the many scientific and technical questions surrounding micrometeorites at the lunar surface, we describe an accelerator facility under construction at the Colorado Center for Lunar Dust and Atmospheric Studies at the University of Colorado. Key technical features of the 3 MV Pelletron-based accelerator include high achievable charge and mass, up to realistic micrometeorite parameters, precise selection of particle size and velocity, high repetition and data acquisition rates. Recent technical work has focused on a SIMION-based study to improve beam focusing and steering, and an FPGA-based filtering and selection unit for detection and selection of individual charged particles during flight. The implementation and design of these advancements will be presented.

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Date submitted: 14 Jul 2010 Electronic form version 1.4