MAS17-2017-000061

Abstract for an Invited Paper
for the MAS17 Meeting of
the American Physical Society

Understanding Space Plasmas Through Laboratory Experiments.[1]

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In the space plasma environment it is hard to pinpoint the causality of events and isolate a specific phenomenon for precise and repeated measurements necessary for definitive conclusion. Complementary laboratory experiments scaled to the appropriate space conditions can help in understanding the physics. Coordinated analyses using both laboratory and space data have been shown to clarify subtleties of space plasma processes. Specific examples will be discussed to highlight the synergy derived from laboratory experiments in understanding natural plasma phenomena. These include cause and effect of turbulence in space, coherent and incoherent processes associated with triggered/chorus emissions frequently observed in the radiation belts, and structure and dynamics of boundary layers such as dipolarization fronts, etc.

[1]Work supported by NRL Base Funds