

Abstract Submitted  
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**Advances in Impedance Probe Applications and Design in the NRL Space Physics Simulation Chamber**<sup>1</sup> DAVID BLACKWELL, Plasma Physics Division, U.S. Naval Research Laboratory, Washington, DC, DAVID WALKER, CHRISTOPHER COTHRAN, Sotera Defense Solutions, Inc., GEORGE GATLING, ERIK TEJERO, WILLIAM AMATUCCI, Plasma Physics Division, U.S. Naval Research Laboratory, Washington, DC — We will present recent progress in plasma impedance probe experiments and design at NRL's Space Physics Simulation Chamber. These include our network analyzer S-parameter methods as well as more portable self-contained diagnostics with an eye towards space vehicle applications. The experiments are performed under a variety of conditions with magnetized and unmagnetized collisionless, cold ( $T_e \approx 1 - 2\text{eV}$ ) plasmas in density ranges of  $10^5\text{-}10^8\text{cm}^{-3}$ . Large and small spheres, disks, floating dipoles and monopoles are all in development with various electronic setups, along with traditional emissive and Langmuir probes for measurement redundancy. New computational results provide experimental predictions over a larger parameter space.

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