Abstract Submitted
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Development of microprobes at UCLA to measure f(v), E and B[1] P. PRIBYL, W. GEKELMAN, M. NAKAMOTO, UCLA, Dept. of Physics and Astronomy, F. CHIANG, J. JUDY, J. STILLMAN, UCLA, Dept of Electrical Engineering — Electric field, magnetic flux, and velocity-analyzer probes sized on the order of a Debye length (30 microns) are being developed using microelectromechanical systems (MEMS) technology, through a joint effort between the UCLA Basic Plasmic Plasma Science Facility and the UCLA Electrical Engineering Department. The electric-field probe has square tips, 8 microns on a side and separated by 20 microns [1]. A probe, now being tested, will have a frequency response of 100 MHz to 12 GHz, and should be able to access events at the plasma frequency (9 GHz) and the electron-cyclotron frequency (1 to 6 GHz) in the Large Plasma Device (LAPD) at UCLA. Differentially wound magnetic flux probes with diameters of 100 to 500 microns are also being fabricated. Finally, we are building velocity-analyzer probes have 2-micron-wide holes and a grid spacing of 15 microns, which yields an angle of acceptance that is less than 10 degrees. Details of the fabrication processes, calibration, and operation of these devices will be presented. [1] P. Pribyl et al,"Debye Size Microprobes for Electric Field Measurements in Laboratory Plasma," accepted for Publication in Review of Scientific Instruments, (2006).

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Walter Gekelman

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