

Abstract Submitted
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Direct Measurement of the Impedance of a Dipole Antenna¹

PATRICK PRIBYL, WALTER GEKELMAN, UCLA Dept of Physics, ALEX GIGLIOTTI, UCLA, Dept Physics — The impedance of a dipole antenna radiating whistler waves has been determined by measuring the current and voltage directly at the antenna tips. The experiment was done at the Large Plasma Device at UCLA. The antenna was immersed in a magneto-plasma at the background magnetic field and plasma density, were both varied. The impedance was measured as a function of f_{pe}/f_{ce} . The standard technique is to measure forward and reflected power at the driven end of the probe shaft, and backing out transmission line properties and system reflections and resonances. Doing this accurately involves detailed knowledge of the circuit and transmission line properties associated with the antenna. The alternate technique we present is advantageous in that we can determine the impedance directly, accurate to zeroth order with transmission line effects only entering as corrections. Data of the radiation impedance from the lower hybrid frequency to higher than $f_{ce}/2$ will be presented.

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