

Abstract Submitted  
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**Dependence of Electron Beam Emittance on Electron Gun Controls, and the Description of Electron Dynamics Using Phase Space Diagrams** RONALD WILLIAMS, ARNESTO BOWMAN, Florida A&M University — The designs and test results of devices for measuring the emittance of a low energy electron beam are discussed. The emittance is controlled by varying the electron gun's cathode, grid and anode; with the goal of minimizing the emittance. Scanning wire probes are used initially however non-perturbing optical probes are being developed. The tests are performed using a 5 keV electron beam, however the scaling to higher energy beams will be discussed. Multidimensional phase space diagrams for the emittance measurements will be discussed. Also, similar phase space diagrams for electrons propagating across laser and plasma waves will be discussed. These results are important steps toward developing a diagnostic for plasma waves using a low emittance electron beams.

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