Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Drift Resonance in High Density Nonneutral Plasmas[1] D.J. KAUP, University of Central Florida — Theoretical studies of the operation of crossed-field electron vacuum devices, such as magnetrons and crossed-field amplifiers (CFA), have usually centered on their initial growth, taking this as an indication of their operating modes. In such an analysis, one solves the equations for the density profile and other features of these devices. However what one actually obtains are only the conditions for the *initial* operation of the device. Eventually the rf fields will saturate, at which time, an operating device will settle into a stationary operating regime, called the "saturation stage," which is where the device simply delivers rf power. Here there is a different set of physical interactions occuring. The amplitudes have saturated and the ponderomotive forces and nonlinear diffusion of the initiation stage have vanished. In this saturation stage, we now find three new rf modes appearing, in addition to the two modes of the initiation stage. These three new modes have very fast oscillations in the vertical direction: one fast mode corresponds to a plasma drift wave, while the other two fast modes are cyclotron-like modes. In this presentation, we will describe how the fast plasma drift wave interacts with the slow modes at the diocotron resonance. In particular, we will determine the conversion coefficients for the crossing of the drift mode with the slow modes at the diocotron resonance.

[1]Research supported in part by the AFOSR

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Date submitted: 21 Jul 2005 Electronic form version 1.4