Abstract Submitted
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Non-Neutral Drift Resonance in Magnetrons[1] D.J. KAUP, University of Central Florida — We study the features of the RF fields in a magnetron, when the RF amplitude has saturated, in the nonrelativistic, electrostatic limit. In this saturated stage, the linear RF equations can be reduced to a fifth-order set of ordinary differential equations. Two modes of which are fast cyclotron modes, one mode is a fast drift wave, and the other two modes are the usual, well-known, slow magnetron modes. Here, we will study the interaction between the fast drift mode (diocotron mode) and the slow magnetron modes, at the diocotron resonance. We will also show that the fast cyclotron modes can be ignored at this resonance, and thereby can reduce the system to a third- order set of ordinary differential equations. Using multiscale techniques, we will then obtain solutions for the inner and the outer regions at the diocotron resonance, and thereby obtain the conversion and transmission rates between these three modes at the diocotron resonance.

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