Abstracts

A Slow Wave Structure for Gyro-TWA H/sub 11/ Operation (Short Papers)

It was shown in a previous work, that it is possible to achieve high quality amplifier application based on the basic cyclotron maser instability principle: the narrow bandwidth of gyro amplifiers could be overcome using a disc loaded circuit in the hybrid mode interaction. In this work, we use the Galerkin method to analyze the cold circuit structure, obtaining both its dispersion characteristics and its characteristic impedance. This effort complements an earlier effort, where a polynomial obtained from experimental data was used for the cold circuit dispersion characteristic. The complete behavior of the actual structure is studied: first, the propagation of the hybrid H/sub 11/ mode in the cold circuit; next, the finite length of the real structure is taken into account to derive the characteristic impedance of the actual circuit. Numerical and experimental results are compared and shown to match accurately throughout the wide frequency range used.

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