Abstracts

Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron

P. Vitello. "Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 917-921.

The efficiency of the mth harmonic electron cyclotron maser interaction for a TE/sub mn1/ gyrotron oscillator is compared with the (m-1)th harmonic peniotron-like interaction. Identical cavities and electron beams are used. Start oscillation conditions from weak-field linear theory are given, as well as optimized nonlinear efficiencies. The peniotron-like interaction leads to optimized efficiencies of /spl lsim/= 65 percent, while those for the electron cyclotron maser interaction are limited to /spl lsim/=25 percent in the cases studied.

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