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标题: Study of a gyrotron oscillator with corrugated interaction cavity

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摘要: Based on the nonlinear self-consistent theory and the three-dimensional electromagnetic simulation software CST, the beam-wave interaction of gyrotron with irregular cross section is studied. Through importing high frequency fields which are the results of CST, the beam-wave interaction efficiency, coupling coefficient and starting current can be obtained. In addition, a 0.4 THz third harmonic TE<sub>33</sub> mode gyrotron with a corrugated interaction cavity is presented according to this approach. The gyrotron with a 40.5 kV/1 A electron beam, magnetic field of 5.09 T, and pitch factor of 1.5 can produce radiation with an output power of 3.3 kW.

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