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Title

Competition between Harmonic Cyclotron Maser Interactions in the Terahertz Regime

Source

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Abstract

Cyclotron harmonic interactions are a key physics issue of critical importance to the generation of terahertz radiation via the electron cyclotron maser instability for practical magnetic field strengths. We present an inherent mechanism, as well as a deciding factor, which governs the competition between low- and high-harmonic interactions. Multimode simulations reveal the physical process in which a significant advantage develops for the lower-harmonic interaction, which eventually dominates in the fully nonlinear stage. The results also suggest a start-up scenario for persistent higher-harmonic operation. (22 References).