Abstracts

Relativistic Plasma Microwave Electronics: Studies of High Power Plasma Filled Backward Wave Oscillators

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The area of relativistic plasma microwave electronics has only recently generated renewed interest in the microwave and millimeter wave device community. We present new experimental data demonstrating that the presence of a low density background plasma in a relativistic backward wave oscillator leads to several beneficial effects, including enhanced interaction efficiency (40%), operation at very low and possibly zero guiding magnetic field, tunability by controlling the plasma density, a high degree of spectral purity, and operation well above the vacuum limiting current.

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