# Abstracts

## Phase Shift and Loss Mechanism of Optically Excited E-Plane Electron-Hole Plasma

*A.S. Rong and Z.L. Sun. "Phase Shift and Loss Mechanism of Optically Excited E-Plane Electron-Hole Plasma." 1994 Transactions on Microwave Theory and Techniques 42.8 (Aug. 1994 [T-MTT]): 1533-1539.*

This paper describes the phase shift and loss mechanism of an optically excited E-plane electron-hole plasma. The formulation based on the integral equation with rapidly convergent spectral Green's function plus a closed form spatial representation is presented. It includes the possible physical effects, among which are the injected light power level, the nonuniform distribution of the plasma and the end discontinuity effect. For GaAs as the inserted semiconductor, it is shown that an optically sensitive regime occurs, where the phase shift is highly influenced by the illumination level and where a peak of the optically induced loss exists. The regime is changed by the distribution profile of the excess carriers. It is also observed that at the high injection light power level, the optically excited plasma behaves like a metallic strip does. The field distributions at the optically excited plasma section are also presented, which support the field-displacement effects of the plasma.

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