93. Title: Plasma resonances in a gated semiconductor slab of arbitrary thickness

Author: Marinchio, H; Millithaler, JF ; Palermo, C \; Varani, L \; Reggiani, L \; Shiktorov, P \; Starikov, E \; Gruzinskis, V

Source: APPLIED PHYSICS LETTERS

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Abstract: We present an analytical model suitable for the study of the plasma modes in gated semiconductor slabs of arbitrary thickness. A pseudo-two-dimensional Poisson equation allows us to consider both transverse and longitudinal electric field variations. We calculate the dispersion relation demonstrating the dispersive nature of the slab. We express the frequencies of the plasma modes appearing in a cavity. A transition from a two-dimensional to a three-dimensional behavior is revealed when the transverse dimension of the device or the order of modes grow. These analytical results show a good agreement with Monte Carlo calculations of the voltage noise spectrum. c Publication year: 2011 American Institute of Physics.

94. Title: A porous terahertz fiber with randomly distributed air holes

Author: Bai, JJ; Li, JN; Zhang, H; Fang, H; Chang, SJ

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Abstract: A random porous fiber for transporting terahertz (THz) waves is proposed in this paper. The fiber, which to the best of our knowledge has not been investigated previously, has its core composed by randomly distributed air holes. A numerical study was carried out near 1 THz, showing that the new fiber possesses some improved fiber properties compared to the regular periodic porous fiber: the power fraction confined in the core is higher, the dispersion becomes lower, and more importantly a flatter dispersion curve appears within the frequency range of 0.8 THz to 1.4 THz.