Abstracts

Magnetoplasma Effects in Solids

B. Lax. "Magnetoplasma Effects in Solids." 1961 Transactions on Microwave Theory and Techniques 9.1 (Jan. 1961 [T-MTT]): 83-89.

Plasmas in solids show a more complex behavior than in gases since they reflect the symmetry properties of crystals. Since the carrier concentration has a wide range in semiconductors and metals, the plasma phenomena can be studied from microwaves to the ultraviolet. The effect of magnetic fields on the electromagnetic properties of plasmas has been experimentally investigated at microwave and infrared frequencies and has been utilized to measure dielectric constant and band structure of such solids in the limit of low magnetic fields. The magneto-plasma exhibits effects analogous to the galvanomagnetic phenomena. However, near resonance in the classical limit, they show up as depolarizing effects in semiconductors and also give rise to a new type of cyclotron resonance under anomalous skin conditions in metals.

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