

514.

Author

Sukhorukov AP. Ignatyeva DO. Kalish AN.

Title

Terahertz and Infrared Surface Wave Beams and Pulses on Gyrotropic, Nonlinear and Metamaterial Interfaces

Source

JOURNAL OF INFRARED MILLIMETER AND TERAHERTZ WAVES, vol.32, no.10, OCT 2011, 1223-1235.

Abstract

This work is devoted to theoretical study of surface plasmon polariton propagation on metal or metamaterial - dielectric interfaces where media can possess optical or magneto-optical activity or cubic nonlinearity. On the interface of gyrotropic media surface wave changes its polarization and profile as well as in case of interface of media with cubic nonlinearity. Surface wave propagation constant can be modified by magnetization leading to magneto-optical intensity effect. The properties of plasmons in gratings are also considered including excitation, dispersion and existence of various types of modes. The theory of surface wave and pulsed beam diffraction in gyrotropic, nonlinear and layered media is developed. We also present waveguide for surface waves based on layered metamaterial - dielectric interfaces suppressing diffraction spreading.