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Both theoretical and experimental approaches are welcomed.The journal aims also to promote the cooperation between scientists working on application of electromagnetism internationally and in particular in the Trans Black Sea Region.

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Volume 3 Number 3 March 2001

CONTENTS

Diffraction of Electromagnetic Waves on an Anisotropic Cylindrical Inhomogeneity inside a Plane Waveguide
V. P. Docuchaev, E. A. Shorochova, V. A. Yashnov 1

Excitation of a plane waveguide with perfectly conducting walls by an elementary vertical electric dipole in the presence of an anisotropic cylindrical inhomogeneity has been studied. Diffraction of normal waves on this inhomogeneity has also been considered. The interaction and transformation analysis of TE and TM modes at the boundary of cylindrical inhomogeneity is given. The exact expression for the longitudinal component of electric field intensity presented in the double series form is obtained. Numerical calculations of the scattering and total electric field are performed and compared with the similar dependencies for the case of an isotropic cylindrical inhomogeneity placed inside the plane waveguide. Two limit cases are analyzed: the Relay approximation and the ray approximation for the case of long and short wavelength, respectively.

Calculation of the Characteristic Impedance of Two-conductors Microwave Strip Transmission Line
Vladimir R. Voinov, Vanya V. Romanova 21

The characteristic impedance Z (TEM - approximation) of a microwave transmission line composed by two rectangular conductors disposed above an infinitive dielectric slab (two - conductors strip transmission line) is calculated. The extended mirror images method together with the universal method for calculation the characteristic impedance of strip transmission lines are used. Calculations are made for two cases. In first case both strip conductors are identical. The graphics for several widths (w\d = 0.1 ; 0.2 ; 0.5 ; 1.0 ; 2.0) and wide range of thicknesses (t/d = 0.01 - 1.0) are shown.. The current density distribution over down and up walls of the conductors is clarified also. In the second case calculations are made when the conductors have different sizes. The values of Z when the sizes of the first conductor remain the same (w_1/d = 1. and t_1/d = 0.1) and the sizes of the second conductor change (w_2/d = 0.1 - 0.5 and t_2\d = 0.01 - 0.5) are shown. In all calculations the thickness of the dielectric slab is 2d, its dielectric constant is ε_r = 2.7 and the distance between conductors is s\d = 0.2 . The expected errors are enough small to meet the design requirements.

Modelling of Electromagnetic Scattering by A Slot Cone Reflector
V. A. Doroshenko 31

The problem of electromagnetic plane wave diffraction on an infinite perfectly conducting circular cone with periodical longitudinal slots is considered. This cone structure is a model of a slot cone antenna and reflector. The plane wave propagates along the cone axis. The method for solving electrodynamics boundary problem is based on using the Kontorovich-Lebedev integral transforms and the Rieman-Hilbert problem method. Analytical solutions for a partly transmitted cone and a

narrow cone sector (strip) are derived. Boundary problem spectra, field structure and its behavior near boundary singularities are investigated.

NonStationary Excitation of a Cone with Slots
V. A. Doroshenko **41**

The time-dependent Green's function boundary problem for a semi-infinite circular perfectly conducting cone with periodical longitudinal slots is considered. This geometry can be regarded as a model of conical slotted antennas. The solution method employs Laplace inversion, the Kontorovich-Lebedev integral transforms and the Riemann-Hilbert method. Representations for the scalar Green's functions for some particular cases of the structure and time parameter are derived.

Reversal Magnetization and the Planar Hall Effect in Thin Magnetic Films with Single Domain Structure
L. Vatskitchev, M. Vatskitcheva, J. Mucha **48**

The magnetization reversal processes in thin magnetic film with uniaxial magnetic anisotropy extend the dominant influence on the planar Hall effect. Numerical analysis based on the uniform rotation of the magnetization in the single domain model gives a possibility to find the critical values of the parameters corresponding to the peculiarities of the Hall curves. The comparison between the theoretical provisions and the experimental Hall curves determines the applicability of the model.