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Sommario/riassunto

"This book presents semi-analytical theory and practical applications of a large number of subwavelength and nanostructured optical waveguides. The contents are organized around four major themes: guidance properties of subwavelength waveguides made of homogeneous anisotropic materials; description of guidance by nanostructured waveguides using effective media approximation; operation of nanostructured waveguides at shorter wavelength at the limit of validity of effective medium approximation; and practical applications of subwavelength and nanostructured waveguides.What makes the book unique is that it collects in a single place a large number of analytical solutions which are derived in a long wavelength regime for a plethora of practically important waveguides and fibers than researchers currently use or study worldwide. The waveguides considered include planar and circular isotropic and anisotropic waveguides, as well as surface waves on planar, and circular surfaces, and the waveguide materials include dielectrics, metals and polar materials. After analysis of the basic waveguide structures it considers waveguides made of the nanostructured materials. Many practical applications are then rigorouslydetailed including low-loss low-dispersion guidance using porous THz waves, long-range propagation of plasmons in thin metallic films, and leakage spectroscopy of leaky plasmonic modes propagating on thin metallic films.A companion website (password-protected) provides a fully functional transfer matrix code PolyTMat (Matlab) which is able to treat any multilayer waveguide of planar or circular geometry made of anisotropic

dielectrics. "--