

Electromagnetic theory and plasmonics for engineers

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Abstrak

This book presents the theory of electromagnetic (EM) waves for upper undergraduate, graduate and PhD-level students in engineering. It focuses on physics and microwave theory based on Maxwells equations and the boundary conditions important for studying the operation of waveguides and resonators in a wide frequency range, namely, from approx. 10^{-9} to 10^{-16} hertz. The author also highlights various current topics in EM field theory, such as plasmonic (comprising a noble metal) waveguides and analyses of attenuations by filled waveguide dielectrics or semiconductors and also by conducting waveguide walls. Featuring a wide variety of illustrations, the book presents the calculated and schematic distributions of EM fields and currents in waveguides and resonators. Further, test questions are presented at the end of each chapter.