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Titolo	Evanescent Waves in Optics [[electronic resource]] : An Introduction to Plasmonics // by Mario Bertolotti, Concita Sibilila, Angela M. Guzman
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Disciplina	530.44
Soggetti	Lasers Photonics Microwaves Optical engineering Quantum optics Optics Electrodynamics Semiconductors Optical materials Electronic materials Optics, Lasers, Photonics, Optical Devices Microwaves, RF and Optical Engineering Quantum Optics Classical Electrodynamics Optical and Electronic Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Preface -- Chapter I Basic electromagnetics -- Chapter II Evanescent Waves -- Chapter III Evanescent Waves in Waveguides -- Chapter IV High resolution optical microscopes (in which evanescent waves play a role) -- Chapter V Plasmons -- Chapter VI Applications of plasmons -- Chapter VII Quantization of evanescent waves, surface plasmons and surface plasmon polaritons. .
Sommario/riassunto	This monograph provides an introductory discussion of evanescent

waves and plasmons, describes their properties and uses, and shows how they are fundamental when operating with nanoscale optics. Far field optics is not suitable for the design, description, and operation of devices at this nanometre scale. Instead one must work with models based on near-field optics and surface evanescent waves. The new discipline of plasmonics has grown to encompass the generation and application of plasmons both as a travelling excitation in a nanostructure and as a stationary enhancement of the electrical field near metal nanosurfaces. The book begins with a brief review of the basic concepts of electromagnetism, then introduces evanescent waves through reflection and refraction, and shows how they appear in diffraction problems, before discussing the role that they play in optical waveguides and sensors. The application of evanescent waves in super-resolution devices is briefly presented, before plasmons are introduced. The surface plasmon polaritons (SPPs) are then treated, highlighting their potential applications also in ultra-compact circuitry. The book concludes with a discussion of the quantization of evanescent waves and quantum information processing. The book is intended for students and researchers who wish to enter the field or to have some insight into the matter. It is not a textbook but simply an introduction to more complete and in-depth discussions. The field of plasmonics has exploded in the last ten years, and most of the material treated in this book is scattered in original or review papers. A short comprehensive treatment is missing; this book is intended to provide just that.
