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Autore	Duke P. J
Titolo	Synchrotron radiation [[electronic resource]] : production and properties / / Philip John Duke
Pubbl/distr/stampa	Oxford ; ; New York, : Oxford University Press, 2009
ISBN	1-282-36589-4 9786612365898 0-19-156543-1
Descrizione fisica	1 online resource (266 p.)
Collana	Oxford series on synchrotron radiation ; ; 3 Oxford science publications
Disciplina	539.7/35
Soggetti	Synchrotron radiation Storage rings Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"This text grew out of a series of lectures given at King's College, London, as part of an MSc course entitled 'X-ray science and technology'"--P. viii. "First published in paperback 2009"--T.p. verso.
Nota di contenuto	Contents; 1 Synchrotron radiation and electromagnetic waves; 2 Electromagnetic radiation is produced by electrons; 3 Electromagnetic radiation-observed and imagined; 4 Radiation from moving electrons; 5 Synchrotron radiation from dipole magnets; 6 The spectral distribution of synchrotron radiation; 7 Photon spectral distribution integrated over vertical angles; 8 Introduction to electron storage rings; 9 Synchrotron radiation from electron storage rings; 10 Behaviour of the electron beam in a synchrotron radiation storage ring. The concept of phase space 11 Behaviour of the electron beam in a synchrotron radiation storage ring. Betatron oscillations12 Behaviour of the electron beam in a synchrotron radiation storage ring. Energy oscillations; 13 Insertion devices-wigglers; 14 Insertion devices-undulators; 15 Recent developments and future prospects; Appendix 1. Vector algebra; Index
Sommario/riassunto	Synchroton radiation is the most important new source of

	electromagnetic radiation and has drastically transformed the study of the properties of materials. This book presents the properties of synchroton radiation in a clear and self-contained way and explains the advanced techniques which are required for its production. - ;This book introduces in a thorough and self-contained way the production of electromagnetic radiation by high energy electron storage rings. This radiation, which is called synchroton radiation, has become a research tool of wide application. Physicists, chemists, biologi

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Altri autori (Persone)	ZayatsA. V (Anatoly V.) MaierStefan A
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Soggetti	Plasmons (Physics) Metamaterials
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Active Plasmonics and Tuneable Plasmonic Metamaterials; Contents; Preface; Contributors; 1 Spaser, Plasmonic Amplification, and Loss Compensation; 1.1 Introduction to Spasers and Spasing; 1.2 Spaser Fundamentals; 1.2.1 Brief Overview of the Latest Progress in Spasers; 1.3 Quantum Theory of Spaser; 1.3.1 Surface Plasmon Eigenmodes and Their Quantization; 1.3.2 Quantum Density Matrix Equations (Optical

Bloch Equations) for Spaser; 1.3.3 Equations for CW Regime; 1.3.4 Spaser operation in CW Mode; 1.3.5 Spaser as Ultrafast Quantum Nanoamplifier
1.3.6 Monostable Spaser as a Nanoamplifier in Transient Regime1.4 Compensation of Loss by Gain and Spasing; 1.4.1 Introduction to Loss Compensation by Gain; 1.4.2 Permittivity of Nanoplasmonic Metamaterial; 1.4.3 Plasmonic Eigenmodes and Effective Resonant Permittivity of Metamaterials; 1.4.4 Conditions of Loss Compensation by Gain and Spasing; 1.4.5 Discussion of Spasing and Loss Compensation by Gain; 1.4.6 Discussion of Published Research on Spasing and Loss Compensations; Acknowledgments; References; 2 Nonlinear Effects in Plasmonic Systems; 2.1 Introduction
2.2 Metallic Nonlinearities-Basic Effects and Models2.2.1 Local Nonlinearity-Transients by Carrier Heating; 2.2.2 Plasma Nonlinearity-The Ponderomotive Force; 2.2.3 Parametric Process in Metals; 2.2.4 Metal Damage and Ablation; 2.3 Nonlinear Propagation of Surface Plasmon Polaritons; 2.3.1 Nonlinear SPP Modes; 2.3.2 Plasmon Solitons; 2.3.3 Nonlinear Plasmonic Waveguide Couplers; 2.4 Localized Surface Plasmon Nonlinearity; 2.4.1 Cavities and Nonlinear Interactions Enhancement; 2.4.2 Enhancement of Nonlinear Vacuum Effects; 2.4.3 High Harmonic Generation
2.4.4 Localized Field Enhancement Limitations2.5 Summary; Acknowledgments; References; 3 Plasmonic Nanorod Metamaterials as a Platform for Active Nanophotonics; 3.1 Introduction; 3.2 Nanorod Metamaterial Geometry; 3.3 Optical Properties; 3.3.1 Microscopic Description of the Metamaterial Electromagnetic Modes; 3.3.2 Effective Medium Theory of the Nanorod Metamaterial; 3.3.3 Epsilon-Near-Zero Metamaterials and Spatial Dispersion Effects; 3.3.4 Guided Modes in the Anisotropic Metamaterial Slab; 3.4 Nonlinear Effects in Nanorod Metamaterials
3.4.1 Nanorod Metamaterial Hybridized with Nonlinear Dielectric3.4.2 Intrinsic Metal Nonlinearity of Nanorod Metamaterials; 3.5 Molecular Plasmonics in Metamaterials; 3.6 Electro-Optical Effects in Plasmonic Nanorod Metamaterial Hybridized with Liquid Crystals; 3.7 Conclusion; References; 4 Transformation Optics for Plasmonics; 4.1 Introduction; 4.2 The Conformal Transformation Approach; 4.2.1 A Set of Canonic Plasmonic Structures; 4.2.2 Perfect Singular Structures; 4.2.3 Singular Plasmonic Structures; 4.2.3.1 Conformal Mapping of Singular Structures 4.2.3.2 Conformal Mapping of Blunt-Ended Singular Structures

Sommario/riassunto

This book, edited by two of the most respected researchers in plasmonics, gives an overview of the current state in plasmonics and plasmonic-based metamaterials, with an emphasis on active functionalities and an eye to future developments. This book is multifunctional, useful for newcomers and scientists interested in applications of plasmonics and metamaterials as well as for established researchers in this multidisciplinary area.