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Nota di contenuto	Cover; Titlepage; Copyright; Contents; List of Contributors; 1 Attosecond and XUV Physics: Ultrafast Dynamics and Spectroscopy; 1.1 Introduction; 1.2 The Emergence of Attosecond Science; 1.2.1 Attosecond Pulse Trains and Isolated Attosecond Pulses; 1.2.2 Characterization of Attosecond Laser Pulses; 1.2.3 Experimental Challenges in Attosecond Science; 1.2.4 Attosecond Science as a Driver for Technological Developments; 1.3 Applications of Attosecond Laser Pulses; 1.4 Ultrafast Science Using XUV/X-ray Free Electron Lasers; 1.5 The Interplay between Experiment and Theory 1.6 Conclusion and OutlookReferences; Part One Laser Techniques; 2 Ultrafast Laser Oscillators and Amplifiers; 2.1 Introduction; 2.2 Mode-Locking and Few-Cycle Pulse Generation; 2.3 High-Energy Oscillators; 2.4 Laser Amplifiers; References; 3 Ultrashort Pulse Characterization; 3.1 Motivation: Why Ultrafast Metrology?; 3.1.1 Ultrafast Science: High-Speed Photography in the Extreme; 3.2 Formal Description of Ultrashort Pulses; 3.2.1 Sampling Theorem; 3.2.2 Chronocyclic Representation of

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6.5.1 The Saddle Point Approximation and the Classical Connection

Sommario/riassunto

This book provides fundamental knowledge in the fields of attosecond science and free electron lasers, based on the insight that the further development of both disciplines can greatly benefit from mutual exposure and interaction between the two communities. With respect to the interaction of high intensity lasers with matter, it covers ultrafast lasers, high-harmonic generation, attosecond pulse generation and characterization. Other chapters review strong-field physics, free electron lasers and experimental instrumentation.Written in an easy accessible style, the book is aimed at gra