



Ultrafast Optics

Andrew Weiner

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DESCRIPTION

A comprehensive treatment of ultrafast optics

This book fills the need for a thorough and detailed account of ultrafast optics. Written by one of the most preeminent researchers in the field, it sheds new light on technology that has already had a revolutionary impact on precision frequency metrology, high-speed electrical testing, biomedical imaging, and in revealing the initial steps in chemical reactions.

Ultrafast Optics begins with a summary of ultrashort laser pulses and their practical applications in a range of real-world settings. Next, it reviews important background material, including an introduction to Fourier series and Fourier transforms, and goes on to cover:

- Principles of mode-locking
- Ultrafast pulse measurement methods
- Dispersion and dispersion compensation
- Ultrafast nonlinear optics: second order

- Ultrafast nonlinear optics: third order
- Mode-locking: selected advanced topics
- Manipulation of ultrashort pulses
- Ultrafast time-resolved spectroscopy
- Terahertz time-domain electromagnetics

Professor Weiner's expertise and cutting-edge research result in a book that is destined to become a seminal text for engineers, researchers, and graduate students alike.

ABOUT THE AUTHOR

Andrew M. Weiner is the Scifres Family Distinguished Professor of Electrical and Computer Engineering at Purdue University. Professor Weiner is the coeditor of two conference proceedings and has published six book chapters, over 200 journal articles, and over 350 conference papers. His research focuses on ultrafast optical signal processing, high-speed optical communications, and ultrabroadband radio-frequency photonics. He is especially well known for pioneering the field of femtosecond pulse shaping, for which he has received numerous awards.

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- First comprehensive description of topic
- Discusses practical applications rather than just theory
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