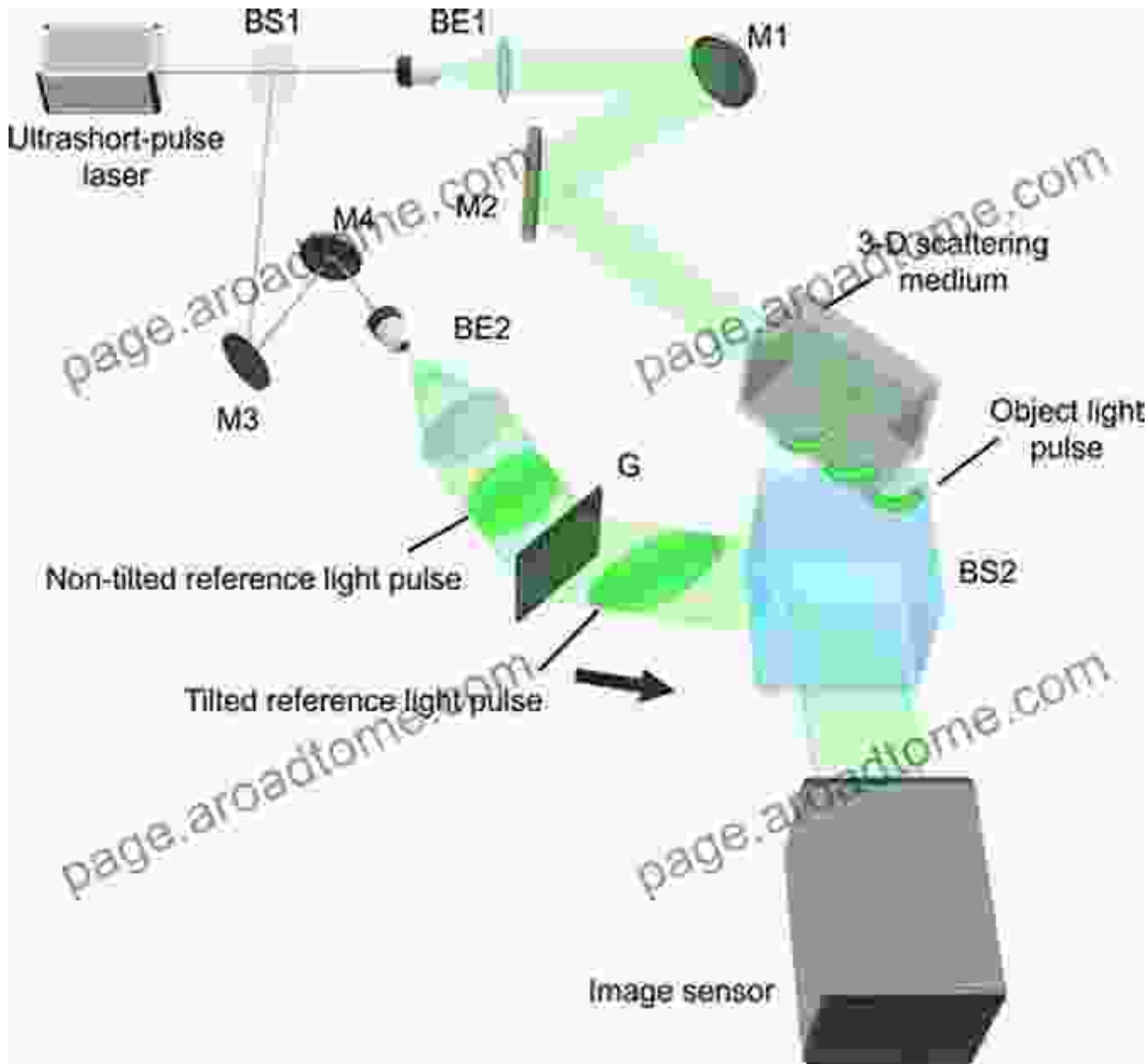
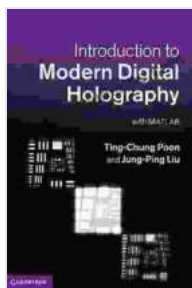


# Unlock the World of Digital Holography with MATLAB: An Immersive Guide for Beginners



Digital holography has revolutionized the field of imaging, providing scientists and engineers with a powerful tool to visualize and analyze objects in unprecedented detail. Unlike traditional photography, which captures only the intensity of light, digital holography records both the

amplitude and phase of light waves, allowing for three-dimensional images with sub-micron resolution. This technology has opened up a vast array of applications, from medical diagnostics and non-destructive testing to microscopy and optical trapping.



## Introduction to Modern Digital Holography: With Matlab

by Ting-Chung Poon

★★★★☆ 4.7 out of 5

Language : English  
File size : 14119 KB  
Text-to-Speech : Enabled  
Screen Reader : Supported  
Enhanced typesetting : Enabled  
Print length : 225 pages



### Enter to Modern Digital Holography with MATLAB

For those seeking a comprehensive and accessible to this cutting-edge field, " to Modern Digital Holography with MATLAB" is the ultimate resource. This meticulously crafted book empowers beginners with a deep understanding of the principles, techniques, and applications of digital holography. By seamlessly integrating theoretical concepts with practical MATLAB examples, the authors guide readers through every stage of the holography process, from image acquisition and reconstruction to image analysis and visualization.

### Dive into the Heart of Holography

The book's chapters unfold like a captivating journey into the world of digital holography. Readers will:

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- Explore the fundamental concepts of holography, including the principles of interference and diffraction.

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- Understand the different types of holography, such as inline holography, off-axis holography, and Fourier transform holography.

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- Delve into the challenges of holography, such as noise, aliasing, and phase unwrapping.

\*

- Master the MATLAB programming environment for image processing, data analysis, and holography reconstruction.

## **Unleash the Power of MATLAB**

MATLAB, a renowned technical computing software, plays an integral role in modern digital holography. The book's MATLAB examples are meticulously crafted to illustrate each concept and technique in a clear and concise manner. Readers will:

\*

- Gain hands-on experience in image acquisition, preprocessing, and reconstruction algorithms.

\*

- Learn how to process and analyze holographic data to extract quantitative information.

\*

- Develop their programming skills through real-world holography applications.

### **Real-World Applications and Case Studies**

The book not only imparts theoretical knowledge but also delves into the practical applications of digital holography. Through engaging case studies, readers will explore:

\*

- The use of digital holography for non-destructive testing to detect flaws in materials.

\*

- The application of digital holography in microscopy for high-resolution imaging of biological samples.

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- The potential of digital holography in optical trapping for manipulating microscopic particles.

### **A Comprehensive Companion for Students and Professionals**

" to Modern Digital Holography with MATLAB" is an indispensable companion for students, researchers, and professionals in various fields, including:

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- Optics and photonics

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- Biomedical engineering

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- Materials science

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- Computer science

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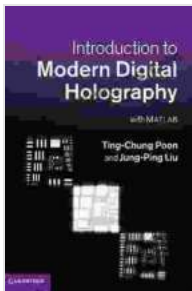
- Electronics and telecommunications

Whether you are a novice or seeking to enhance your understanding, this book will equip you with the knowledge and skills to navigate the exciting world of digital holography.

**Embrace the Future of Imaging**

Digital holography is rapidly transforming the way we visualize and interact with the world around us. This book provides a solid foundation for understanding this revolutionary technology and unlocking its potential for groundbreaking applications.

Embark on your journey into the realm of modern digital holography with "Introduction to Modern Digital Holography with MATLAB" today.

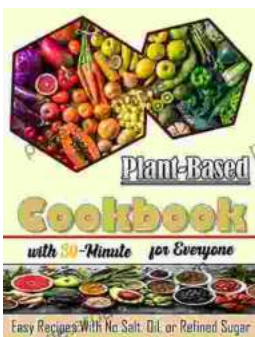


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