

1. Record Nr.	UNINA9910830611203321
Autore	Benton Stephen A
Titolo	Holographic imaging [[electronic resource] /] / Stephen A. Benton, V. Michael Bove, Jr. ; illustration and design by Elizabeth Connors-Chen ; additional material by William Farmer ... [et al.]
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Interscience, c2008
ISBN	1-281-37391-5 9786611373917 0-470-22413-4 0-470-22412-6
Descrizione fisica	1 online resource (296 p.)
Altri autori (Persone)	BoveV. Michael
Disciplina	621.36 621.3675
Soggetti	Holography
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Holographic Imaging; Contents; Foreword: Holography; Foreword: Nerd Pride; Guide to Color Plates; Introduction: Why Holographic Imaging?; About This Volume; The Window View Upon Reality; References; Chapter 1: Holograms and Perception; Provoking Spatial Perceptions; Optical Information; Light as Waves and Rays; Capturing the Directions of Rays; Classical Optical Techniques; Holographic Direction Recording; Origins of Holography; Application Areas; Styles of Analysis; References; Chapter 2: Light as Waves; Light; Wave Shapes; Light as Repetitive Waves; Light as Sinusoidal Waves Coherence in WavesE&M Nature of the Waves; Intensity (Irradiance); Conclusions; References; Chapter 3: Waves and Phases; Introduction; Wave Phase; Radius of Curvature; Local Inclination and Divergence of a Complex Wave; Conclusions; Chapter 4: Two-Beam Interference; Introduction; Quantitative Discussion of Interference Contrast; Geometry of Interference Fringes; Simple Interference Patterns; Conclusions; References; Chapter 5: Diffraction; Introduction; Diffraction by Periodic Structures; Single-Slit Diffraction; Use of Lenses; Viewing Diffraction Patterns with the Eye

Styles of Diffraction Analysis Grating Equation; Spatial Frequency; Grating Example; Off-Axis Grating Equation; Diffraction by a Sinusoidal Grating; Conclusions; References; Chapter 6: Diffraction Efficiency of Gratings; Introduction; Definition of Diffraction Efficiency; Transmission Patterns; Thick Gratings; References; Chapter 7: "Platonic" Holography; Introduction; Object Beam; Reference Beam; Interference Pattern; Holographic Recording Material; Holographic Transmittance Pattern; Illuminating Beam; A Proof of Holography; Other Reconstructed Components; Arbitrary Wavefronts
Diffraction Efficiency Conclusions; References; Chapter 8: Ray-Tracing Analysis of Holography; Introduction; Mathematical Ray-Tracing; Numerical Example; Comparison of Paraxial Hologram and Lens Optics; Three-Dimensional Ray-Tracing; Conclusions; References; Chapter 9: Holographic Lenses and In-Line "Gabor" Holography; Introduction; Transition to Wavefront Curvature; Phase Footprints, Again; In-Line Interference, Again; Transmittance Proof of the Focus Equation; In-Line (Gabor) Holograms; Conclusions; Chapter 10: Off-Axis "Leith & Upatnieks" Holography; Introduction
Implications of Off-Axis Holography Interference and Diffraction in Off-Axis Holograms; Models for Off-Axis Holograms; Image Magnification; Intermodulation Noise; Conclusions; References; Chapter 11: Non-Laser Illumination of Holograms; Introduction; Problems with Laser Illumination; Sources of Image Blur; Narrow-Band Illumination; Point-Source White Illumination; Image Depth Effects; Other Approaches; Conclusions; References; Chapter 12: Phase Conjugation and Real Image Projection; Real Image Projection Techniques; Phase Conjugation- a Descriptive Approach
Perfect Conjugate Illumination (Examples)

Sommario/riassunto

The only all-inclusive treatment of holography-from fundamental principles to the most advanced concepts While several existing texts cover different aspects of the field of holography, none provides a complete, up-to-date, and accessible view of its popular, scientific, and engineering aspects. Now, from an author team that includes one of the world's pioneers in the field, Holographic Imaging fills this need with a single, comprehensive text that covers the subject from traditional holography to the cutting-edge development of the world's most advanced three-dimensional holographic images,
