

1. Record Nr.	UNINA9911020017103321
Autore	Benton Stephen A
Titolo	Holographic imaging / / 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	9786611373917 9781281373915 1281373915 9780470224137 0470224134 9780470224120 0470224126
Descrizione fisica	1 online resource (296 p.)
Altri autori (Persone)	BoveV. Michael, Jr.
Disciplina	621.36/75
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,
