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Nota di contenuto	UNIFIED OPTICAL SCANNING TECHNOLOGY; CONTENTS; Preface; 1 INTRODUCTION-TECHNOLOGY OVERVIEW AND UNIFYING PRINCIPLES; 1.1 Optical Scanning Characteristics and Disciplines; 1.2 Active and Passive Scanning; 1.2.1 Conjugate Image Representations; 1.2.2 Retroreflection and Double-Pass Systems; 1.3 Input, Output, and Remote Sensing Systems; 1.4 Optical and Resolution Invariants; Optical Transfer; 1.5 System Architecture; 1.5.1 Objective Lens Relationships; 2 SCANNING THEORY AND PROCESSES; 2.1 The Point Spread Function and Its Convolution; 2.1.1 PSF Developed from Uniform Illumination of an Aperture 2.1.2 PSF Developed from Aperture Illumination with a Gaussian Distribution 2.1.3 Scanning-Controlled Movement of the PSF; Its Convolution; 2.2 Quantized or Digitized Scan; 2.2.1 The Sampling

Criterion; 2.3 Gaussian Beam Propagation; 2.3.1 Representation and Development of the Gaussian Beam; 2.3.2 Gaussian Beam Focusing Characteristics; 2.4 Scanned Quality Criteria and the Modulation Transfer Function; 2.4.1 The Fourier Transform; 2.4.2 The Modulation Transfer Function; 3 SCANNED RESOLUTION; 3.1 Influence and Significance of Scanned Resolution; 3.1.1 Basis of Scanned Resolution 3.1.2 Resolution Nomograph 3.2 Aperture Shape Factor; 3.2.1 Uniformly Illuminated Apertures; 3.2.2 Summary of Aperture Shape Factors; 3.3 The Resolution Equation, the Resolution Invariant, and Beam Propagation; 3.3.1 Propagation of Noise and Error Components; 3.4 Augmented Resolution; 3.4.1 Radial Symmetry and Scan Magnification; 3.4.2 Augmented Resolution for Holographic Scanners; 3.5 Resolution in Passive and Remote Sensing Systems; 4 SCANNER DEVICES AND TECHNIQUES; 4.1 Scanning Technology Organization; 4.2 High-Inertia Scanning; 4.3 Rotating Polygons 4.3.1 Distinctions Between Pyramidal and Prismatic Polygons 4.3.2 Duty Cycle; 4.3.3 Over- and Underillumination (Over- and Underfilling) of the Facet; 4.3.4 Facet Tracking; 4.3.5 Design Considerations; 4.3.6 Passive Scanning for Remote Sensing; 4.4 Holographic Scanners; 4.4.1 Scanner Configurations and Characteristics; 4.4.2 Implementation of Holographic Scanners; 4.5 Oscillatory (Vibrational) Scanners; 4.5.1 The Galvanometric Scanner; 4.5.2 The Resonant Scanner; 4.5.3 Suspension Systems and Position Control; 4.5.4 The Fast-Steering Mirror; 4.5.5 The Fiber Optic Scanner 4.6 Scanner-Lens Relationships 4.6.1 Scanner-Lens Architecture; 4.6.2 Double-Pass Architecture; 4.6.3 Aperture Relaying; 4.6.4 Lens Relationships for Control of Deflection Error; 4.7 Low-Inertia Scanning; 4.8 Acoustooptic Scanners; 4.8.1 Operating Principles; 4.8.2 Fundamental Characteristics; 4.8.3 Alternate Acoustooptic Deflection Techniques; 4.9 Electrooptic (Gradient) Scanners; 4.9.1 Implementation Methods; 4.9.2 Drive Power; 4.10 Agile Beam Steering; 4.10.1 Phased Array Technology; 4.10.2 Decentered Microlens Arrays; 4.10.3 Summary of Agile Beam Steering

5 CONTROL OF SCANNER BEAM MISPLACEMENT

Sommario/riassunto

Written by an award-winning leader in the field, this is a thoroughly integrated overview of the many facets and disciplines of optical scanning. Of particular utility to both practitioner and student are such features as: An overview of the technology and unifying principles, including active and passive scanning, optical transfer, and system architecture. In-depth chapters on scanning theory and processes, scanned resolution, scanner devices and techniques, and the control of scanner beam misplacement. A comprehensive review of the government-sponsored research of agile