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Laser Sources; 6.8 Laser Safety; 6.9 Summary; 6.10 Problems; Further Reading; 7 Photodetectors; 7.1 Photomultipliers; 7.2 Photodiodes; 7.3 Charge-Coupled Detector Arrays; 7.4 Photoconductive Detectors; 7.5 Pyroelectric Detectors; 7.6 Summary; 7.7 Problems; Further Reading; 8 Measurements of Length; 8.1 The Definition of the Metre; 8.2 Length Measurements  
8.3 Measurements of Changes in Length 8.4 Summary; 8.5 Problems; Further Reading; 9 Optical Testing; 9.1 The Fizeau Interferometer; 9.2 The Twyman-Green Interferometer; 9.3 Analysis of Wavefront Aberrations; 9.4 Laser Unequal-Path Interferometers; 9.5 The Point-Diffraction Interferometer; 9.6 Shearing Interferometers; 9.7 Grazing-Incidence Interferometry; 9.8 Summary; 9.9 Problems; Further Reading; 10 Digital Techniques; 10.1 Digital Fringe Analysis; 10.2 Digital Phase Measurements; 10.3 Testing Aspheric Surfaces; 10.4 Summary; 10.5 Problems; Further Reading; 11 Macro- and Micro-Interferometry 11.1 Interferometry of Refractive Index Fields 11.2 The Mach-Zehnder Interferometer; 11.3 Interference Microscopy; 11.4 Multiple-Beam Interferometry; 11.5 Two-Beam Interference Microscopes; 11.6 The Nomarski Interferometer; 11.7 Summary; 11.8 Problems; Further Reading; 12 White-Light Interference Microscopy; 12.1 White-Light Interferometry; 12.2 White-Light Phase-Shifting Microscopy; 12.3 Spectrally Resolved Interferometry; 12.4 Coherence-Probe Microscopy; 12.5 Summary; 12.6 Problems; Further reading; 13 Holographic and Speckle Interferometry; 13.1 Holographic Interferometry 13.2 Holographic Nondestructive Testing

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#### Sommario/riassunto

Optical interferometry is used in communications, medical imaging, astronomy, and structural measurement. With the use of an interferometer engineers and scientists are able to complete surface inspections of micromachined surfaces and semiconductors. Medical technicians are able to give more concise diagnoses with the employ of interferometers in microscopy, spectroscopy, and coherent tomography. Originating from a one-day course, this material was expanded to serve as an introduction to the topic for engineers and scientists that have little optical knowledge but a need for more in the

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