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Propagation of Optical Pulses in Optical Fibers; 2.3 Basic Theory of the Gradient-Index Optical Fiber; 2.3.1 Ray Equation in Inhomogeneous Media; 2.3.2 Ray Optics of GRIN Fiber; 2.3.3 Wave Optics of GRIN Fiber; 2.3.4 Basic Characteristics of Gradient Index Lens; 2.4 Special Optical Fibers; 2.4.1 Rare-Earth-Doped Fibers and Double-Cladding Fibers; 2.4.2 Polarization Maintaining Fibers
3.5.1 Fiber Polarizers3.5.2 Fiber Polarization Controller; 3.5.3 Fiber Depolarizer and Polarization Scrambler; 3.5.4 Fiber Optical Isolator and Circulator; Problems; References; 4 FIBER GRATINGS AND RELATED DEVICES; 4.1 Introduction to Fiber Gratings; 4.1.1 Basic Structure and Principle; 4.1.2 Photosensitivity of Optical Fibers; 4.1.3 Fabrication and Classifications of Fiber Gratings; 4.2 Theory of Fiber Grating; 4.2.1 Theory of Uniform FBG; 4.2.2 Theory of Long-Period Fiber Grating; 4.2.3 Basic Theory of Nonuniform Fiber Gratings; 4.2.4 Inverse Engineering Design
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Sommario/riassunto

This book describes the latest development in optical fiber devices, and their applications to sensor technology. Optical fiber sensors, an important application of the optical fiber, have experienced fast development, and attracted wide attentions in basic science as well as in practical applications. Sensing is often likened to human sense organs. Optical fiber can not only transport information acquired by sensors at high speed and large volume, but also can play the roles of sensing element itself. Compared with electric and other types of sensors, fiber sensor technology has unique merits