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<<非线性纤维光学>>

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内容概要

Since the publication of the first edition of this book in 1989, the field of nonlinear fiber optics has virtually exploded. A major factor behind such a tremendous growth was the advent of fiber amplifiers, made by doping silica or fluoride fibers with rare-earth ions such as erbium and neodymium. Such amplifiers revolutionized the design of fiber-optic communication systems, including those making use of optical solitons whose very existence stems from the presence of nonlinear effects in optical fibers. Optical amplifiers permit propagation of lightwave signals over thousands of kilometers as they can compensate for all losses encountered by the signal in the optical domain. At the same time, fiber amplifiers enable the use of massive wavelength-division multiplexing (WDM) and have led to the development of lightwave systems with capacities exceeding 1 Tb/s. Nonlinear fiber optics plays an increasingly important role in the design of such high-capacity lightwave systems. In fact, an understanding of various nonlinear effects occurring inside optical fibers is almost a prerequisite for a lightwave-system designer. . The third edition is intended to bring the book up-to-date so that it remains a unique source of comprehensive coverage on the subject of nonlinear fiber optics. An attempt was made to include recent research results on all topics relevant to the field of nonlinear fiber optics. Such an ambitious objective increased the size of the book to the extent that it was necessary to split it into two separate books. This book will continue to deal with the fundamental aspects of nonlinear fiber optics. A second book Applications of Nonlinear Fiber Optics is devoted to its applications; it is referred to as Part B in this text. ...

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书籍目录

Preface 1 Introduction 1.1 Historical Perspective 1.2 Fiber Characteristics 1.3 Fiber Nonlinearities 1.4 Overview Problems References 2 Pulse Propagation in Fibers 2.1 Maxwell ' s Equations 2.2 Fiber Modes 2.3 Pulse-Propagation Equation 2.4 Numerical Methods Problems References3 Group-Velocity Dispersion 3.1 Different Propagation Regimes 3.2 Dispersion-Induced Pulse Broadening 3.3 Third-Order Dispersion 3.4 Dispersion Management Problems References4 Self-Phase Modulation 4.1 SPM-Induced Spectral Broadening 4.2 Effect of Group-Velocity Dispersion 4.3 Higher-Order Nonlinear Effects Problems References5 Optical Solitons 5.1 Modulation Instability 5.2 Fiber Solitons 5.3 Other Typescof Solitons 5.4 Perturbation of Solitons 5.5 Higher-Order Effects Problems References6 Polarization Effects 6.1 Nonlineaz Birefringence 6.2 Nonlinear Phase Shift 6.3 Evolution of Polarization State 6.4 Vector Modulation Instability 6.5 Birefringence and Solitons 6.6 Random Birefringence Problems References7 Cross-Phase Modulation 7.1 XPM-Induced Nonlinear Coupling 7.2 XPM-Induced Modulation Instability 7.3 XPM-Paired Solitons 7.4 Spectral and Temporal Effects 7.5 Applications of XPM Problems References8 Stimulated Raman Scattering 8.1 Basi Concepts 8.2 Quasi-Continuous SRS 8.3 SRS with Short Pump Pulses 8.4 Soliton Effects 8.5 Effect of Four-Wave Mixing Problems References9 Stimulated Brillouin Scattering 9.1 Basi Concepts 9.2 Quasi-CW SBS 9.3 Dynami Aspects 9.4 Brillouin Fiber Lasers 9.5 SBS Applications Problems References10 Parametri Processes 10.1 Origin of Four-Wave Mixing 10.2 Theory of Four-Wave Mixing 10.3 Phase-Matching Techniques 10.4 Parametri Amplification 10.5 FWM Applications 10.6 Second-Harmoni Generation Problems ReferencesAppendix A DecibelcUnitsAppendix B Nonlinear Refractive IndexAppendix C AcronymsIndex

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