

1. Record Nr.	UNINA9910785337103321
Autore	Agrawal G. P (Govind P.), <1951->
Titolo	Fiber-optic communication systems // Govind P. Agrawal
Pubbl/distr/stampa	New York : , : Wiley, , 2010 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2011]
ISBN	0-470-92282-6 1-282-88374-7 9786612883743 0-470-91852-7 0-470-91851-9
Edizione	[4th ed.]
Descrizione fisica	1 online resource (xvii, 603 p.) : ill
Collana	Wiley series in microwave and optical engineering ; ; 222
Disciplina	621.382/75
Soggetti	Optical communications Fiber optics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- 1 Introduction -- 1.1 Historical Perspective -- 1.2 Basic Concepts -- 1.3 Optical Communication Systems -- 1.4 Lightwave System Components -- Problems -- References -- 2 Optical Fibers -- 2.1 Geometrical-Optics Description -- 2.2 Wave Propagation -- 2.3 Dispersion in Single-Mode Fibers -- 2.4 Dispersion-Induced Limitations -- 2.5 Fiber Losses -- 2.6 Nonlinear Optical Effects -- 2.7 Fiber Design and Fabrication -- Problems -- References -- 3 Optical Transmitters -- 3.1 Semiconductor Laser Physics -- 3.2 Single-Mode Semiconductor Lasers -- 3.3 Laser Characteristics -- 3.4 Optical Signal Generation -- 3.5 Light-Emitting Diodes -- 3.6 Transmitter Design -- Problems -- References -- 4 Optical Receivers -- 4.1 Basic Concepts -- 4.2 Common Photodetectors -- 4.3 Receiver Design -- 4.4 Receiver Noise -- 4.5 Coherent Detection -- 4.6 Receiver Sensitivity -- 4.7 Sensitivity Degradation -- 4.8 Receiver Performance -- Problems -- References -- 5 Lightwave Systems -- 5.1 System Architectures -- 5.2 Design Guidelines -- 5.3 Long-Haul Systems -- 5.4 Sources of Power Penalty -- 5.5 Forward Error Correction -- 5.6 Computer-Aided Design -- Problems -- References -- 6 Multichannel Systems -- 6.1 WDM

Lightwave Systems -- 6.2 WDM Components -- 6.3 System Performance Issues -- 6.4 Time-Division Multiplexing -- 6.5 Subcarrier Multiplexing -- 6.6 Code-Division Multiplexing -- Problems -- References -- 7 Loss Management -- 7.1 Compensation of Fiber Losses -- 7.2 Erbium-Doped Fiber Amplifiers -- 7.3 Raman Amplifiers -- 7.4 Optical Signal-To-Noise Ratio -- 7.5 Electrical Signal-To-Noise Ratio -- 7.6 Receiver Sensitivity and Q Factor -- 7.7 Role of Dispersive and Nonlinear Effects -- 7.8 Periodically Amplified Lightwave Systems -- Problems -- References -- 8 Dispersion Management -- 8.1 Dispersion Problem and Its Solution -- 8.2 Dispersion-Compensating Fibers -- 8.3 Fiber Bragg Gratings -- 8.4 Dispersion-Equalizing Filters -- 8.5 Optical Phase Conjugation -- 8.6 Channels at High Bit Rates. 8.7 Electronic Dispersion Compensation -- Problems -- References -- 9 Control of Nonlinear Effects -- 9.1 Impact of Fiber Nonlinearity -- 9.2 Solitons in Optical Fibers -- 9.3 Dispersion-Managed Solitons -- 9.4 Pseudo-linear Lightwave Systems -- 9.5 Control of Intrachannel Nonlinear Effects -- Problems -- References -- 10 Advanced Lightwave Systems -- 10.1 Advanced Modulation Formats -- 10.2 Demodulation Schemes -- 10.3 Shot Noise and Bit-Error Rate -- 10.4 Sensitivity Degradation Mechanisms -- 10.5 Impact of Nonlinear Effects -- 10.6 Recent Progress -- 10.7 Ultimate Channel Capacity -- Problems -- References -- 11 Optical Signal Processing -- 11.1 Nonlinear Techniques and Devices -- 11.2 All-Optical Flip-Flops -- 11.3 Wavelength Converters -- 11.4 Ultrafast Optical Switching -- 11.5 Optical Regenerators -- Problems -- References -- A System of Units -- B Acronyms -- C General Formula for Pulse Broadening -- D Software Package.

Sommario/riassunto

"This book provides a comprehensive account of fiber-optic communication systems. The 3rd edition of this book is used worldwide as a textbook in many universities. This 4th edition incorporates recent advances that have occurred, in particular two new chapters. One deals with the advanced modulation formats (such as DPSK, QPSK, and QAM) that are increasingly being used for improving spectral efficiency of WDM lightwave systems. The second chapter focuses on new techniques such as all-optical regeneration that are under development and likely to be used in future communication systems. All other chapters are updated, as well."--
