1. Record Nr. UNINA9910135973703321

Autore	Schmeckebier Holger
Titolo	Quantum-Dot-Based Semiconductor Optical Amplifiers for O-Band Optical Communication / / by Holger Schmeckebier
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	9783319442754
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XXIII, 190 p. 109 illus., 59 illus. in color.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	530
Soggetti	Semiconductors Lasers Photonics Signal processing Image processing Speech processing systems Optics, Lasers, Photonics, Optical Devices Signal, Image and Speech Processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	'Doctoral Thesis accepted by the Technical University of Berlin, Germany."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Semiconductor Optical Ampliers (SOAs) -- Samples and Characterization -- Introduction to System Experiments -- Concept of Direct Phase Modulation -- Signal Amplication -- Concept of Dual-Band Ampliers -- Signal Processing - Wavelength Conversion -- Summary and Outlook.
Sommario/riassunto	This thesis examines the unique properties of gallium arsenide (GaAs)-based quantum-dot semiconductor optical amplifiers for optical communication networks, introducing readers to their fundamentals, basic parameters and manifold applications. The static and dynamic properties of these amplifiers are discussed extensively in comparison to conventional, non quantum-dot based amplifiers, and their unique advantages are elaborated on, such as the fast carrier dynamics and the decoupling of gain and phase dynamics. In addition to diverse

amplification scenarios involving single and multiple high symbol rate amplitude and phase-coded data signals, wide-range wavelength conversion as a key functionality for optical signal processing is investigated and discussed in detail. Furthermore, two novel device concepts are developed and demonstrated that have the potential to significantly simplify network architectures, reducing the investment and maintenance costs as well as the energy consumption of future networks. .