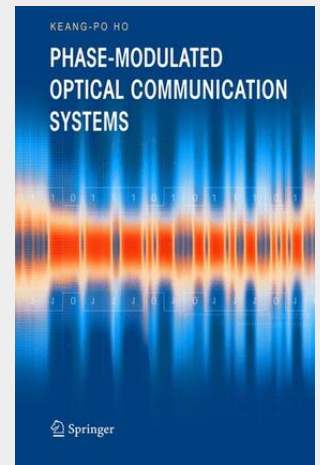


Phase-Modulated Optical Communication Systems

Fiber-optic communication systems have revolutionized our telecommunication infrastructures – currently, almost all telephone land-line, cellular, and internet communications must travel via some form of optical fibers. In these transmission systems, neither the phase nor frequency of the optical signal carries information – only the intensity of the signal is used. To transmit more information in a single optical carrier, the phase of the optical carrier must be explored. As a result, there is renewed interest in phase-modulated optical communications, mainly in direct-detection DPSK signals for long-haul optical communication systems. When optical amplifiers are used to maintain certain signal level among the fiber link, the system is limited by amplifier noises and fiber nonlinearities. Phase-Modulated Optical Communication Systems surveys this newly popular area, covering the following topics: - The transmitter and receiver for phase-modulated coherent lightwave systems - Method for performance analysis of phase-modulated optical signals - Direct-detection DPSK signal with fiber nonlinearities, degraded by nonlinear phase noise and intrachannel effects - Wavelength-division-multiplexed direct-detection DPSK signals - Multi-level phase-modulated optical signals, such as the four-phase DQPSK signal. Graduate students, professional engineers, and researchers will all benefit from this updated treatment of an important topic in the optical communications field.

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117,69 €

109,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9781441937377

Medium: Buch

ISBN: 978-1-4419-3737-7

Verlag: Springer US

Erscheinungstermin: 29.10.2010

Sprache(n): Englisch

Auflage: 1. Auflage. Softcover version of original hardcover Auflage 2005

Produktform: Kartoniert

Gewicht: 674 g

Seiten: 430

Format (B x H): 155 x 235 mm

