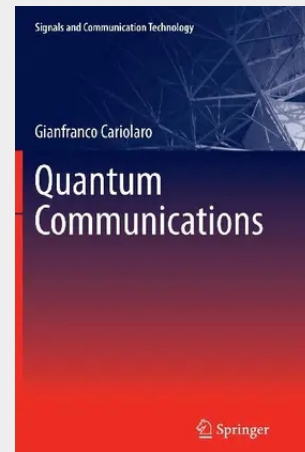


Quantum Communications

This book demonstrates that a quantum communication system using the coherent light of a laser can achieve performance orders of magnitude superior to classical optical communications. Quantum Communications provides the Masters and PhD signals or communications student with a complete basics-to-applications course in using the principles of quantum mechanics to provide cutting-edge telecommunications. Assuming only knowledge of elementary probability, complex analysis and optics, the book guides its reader through the fundamentals of vector and Hilbert spaces and the necessary quantum-mechanical ideas, simply formulated in four postulates. A turn to practical matters begins with and is then developed by: - development of the concept of quantum decision, emphasizing the optimization of measurements to extract useful information from a quantum system; - general formulation of a transmitter–receiver system - particular treatment of the most popular quantum communications systems—OOK, PPM, PSK and QAM; - more realistic performance evaluation introducing thermal noise and system description with density operators; - consideration of scarce existing implementations of quantum communications systems and their difficulties with suggestions for future improvement; and - separate treatment of quantum information with discrete and continuous states. Quantum Communications develops the engineering student's exposure to quantum mechanics and shows physics students that its theories can have practically beneficial application in communications systems. The use of example and exercise questions (together with a downloadable solutions manual for instructors, available from <http://extras.springer.com/>) will help to make the material presented really sink in for students and invigorate subsequent research.

This book demonstrates that a quantum communication system using the coherent light of a laser can achieve performance orders of magnitude superior to classical optical communications. Quantum Communications provides the Masters and PhD signals or communications student with a complete basics-to-applications course in using the principles of quantum mechanics to provide cutting-edge telecommunications. Assuming only knowledge of elementary probability, complex analysis and optics, the book guides its reader through the fundamentals of vector and Hilbert spaces and the necessary quantum-mechanical ideas, simply formulated in four postulates. A turn to practical matters begins with and is then developed by: development of the concept of quantum decision, emphasizing the optimization of measurements to extract useful information from a quantum system; general formulation of a transmitter receiver system; particular treatment of the most popular quantum communications systems; OOK, PPM, PSK and QAM; more realistic performance evaluation introducing thermal noise and system description with density operators; consideration of scarce existing implementations of quantum communications systems and their difficulties with suggestions for future improvement; and separate treatment of quantum information with discrete and continuous states. Quantum Communications develops the engineering student's exposure to quantum mechanics and shows physics students that its theories can have practically beneficial application in communications systems. The use of example and exercise questions (together with a downloadable solutions manual for instructors, available from <http://extras.springer.com/>) will help to make the material presented really sink in for students and invigorate subsequent research.



96,29 €

89,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783319343754

Medium: Buch

ISBN: 978-3-319-34375-4

Verlag: Springer

Erscheinungstermin: 05.10.2016

Sprache(n): Englisch

Auflage: Softcover Nachdruck of the original 1. Auflage 2015

Serie: Signals and Communication Technology

Produktform: Kartoniert

Gewicht: 11617 g

Seiten: 673

Format (B x H): 155 x 235 mm

