Optical Wireless Communications: System and Channel Modelling with MATLAB®

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Detailing a systems approach, **Optical Wireless Communications: System and Channel Modelling with MATLAB®**, is a self-contained volume that concisely and comprehensively covers the theory and technology of optical wireless communications systems (OWC) in a way that is suitable for undergraduate and graduate-level students, as well as researchers and professional engineers.

Incorporating MATLAB® throughout, the authors highlight past and current research activities to illustrate optical sources, transmitters, detectors, receivers, and other devices used in optical wireless communications. They also discuss both indoor and outdoor environments, discussing how different factors—including various channel models—affect system performance and mitigation techniques.

In addition, this book broadly covers crucial aspects of OWC systems:

- Fundamental principles of OWC
- Devices and systems
- Modulation techniques and schemes (including polarization shift keying)
- Channel models and system performance analysis
- Emerging visible light communications
- Terrestrial free space optics communication
- Use of infrared in indoor OWC

One entire chapter explores the emerging field of visible light communications, and others describe techniques for using theoretical analysis and simulation to mitigate channel impact on system performance. Additional topics include wavelet denoising, artificial neural networks, and spatial diversity. Content also covers different challenges encountered in OWC, as well as outlining possible solutions and current research trends. A major attraction of the book is the presentation of MATLAB simulations and codes, which enable readers to execute extensive simulations and better understand OWC in general.

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