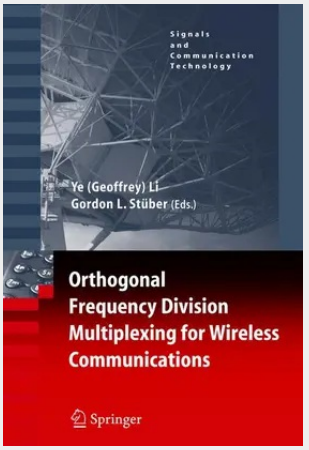
Li / Stuber

Orthogonal Frequency Division Multiplexing for Wireless Communications



Orthogonal Frequency Division Multiplexing for Wireless Communications is an edited volume with contributions by leading authorities in the subject of OFDM. Its coverage consists of principles, important wireless topics (e.g. Synchronization, channel estimation, etc.) and techniques. Included is information for advancing wireless communication in a multipath environment with an emphasis on implementation of OFDM in base stations.

Orthogonal Frequency Division Multiplexing for Wireless Communications provides a comprehensive introduction of the theory and practice of OFDM. To facilitate the readers, extensive subject indices and references are given at the end of the book. Even though each chapter is written by different experts, symbols and notations in all chapters of the book are consistent.

Frequency division multiplexing (FDM) is a technology that transmits multiple signals simultaneously over a single transmission path, such as a cable or wireless system. Each signal travels within its own unique frequency range (carrier), which is modulated by the data (text, voice, video, etc.). Orthogonal FDM's (OFDM) spread spectrum technique distributes the data over a large number of carriers that are spaced apart at precise frequencies. This spacing provides the "orthogonality" in this technique which prevents the demodulators from seeing frequencies other than their own. The benefits of OFDM are high spectral efficiency, resiliency to RF interference, and lower multi-path distortion. This is useful because in a typical terrestrial broadcasting scenario there are multipath-channels (i.e. the transmitted signal arrives at the receiver using various paths of different length). Since multiple versions of the signal interfere with each other (inter symbol interference (ISI)) it becomes very hard to extract the original information. OFDM is sometimes called multi-carrier or discrete multi-tone modulation. It is the modulation technique used for digital TV in Europe, Japan and Australia.

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