Franceschini / Ferrari / Raheli

LDPC Coded Modulations

This book focuses on the analysis and design of low-density parity-check (LDPC) coded modulations, which are becoming part of several current and future communication systems, such as high-throughput terrestrial and satellite wireless networks. In this book, a two-sided perspective on the design of LDPC coded systems is proposed, encompassing both code/modulation optimization (transmitter side) and detection algorithm design (receiver side). After introducing key concepts on error control coding, in particular LDPC coding, and detection techniques, the book presents several relevant applications. More precisely, by using advanced performance evaluation techniques, such as extrinsic information transfer charts, the optimization of coded modulation schemes are considered for (i) memoryless channels, (ii) dispersive and partial response channels, and (iii) concatenated systems including differential encoding. This book is designed to be used by graduate students working in the field of communication theory, with particular emphasis on LDPC coded communication schemes, and industry experts working on related fields.

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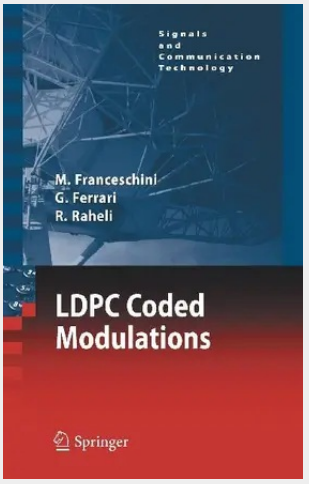

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