

Permutation polynomial interleavers for Turbo Codes

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Abstrak

This book investigates the permutation polynomial (PP) based interleavers for turbo codes, including all the main theoretical and practical findings related to topics such as full coefficient conditions for PPs up to fifth; the number of all true different PPs up to fifth degree; the number of true different PPs under Zhao and Fan sufficient conditions, for any degree (with direct formulas or with a simple algorithm); parallel decoding of turbo codes using PP interleavers by butterfly networks; upper bounds of the minimum distance for turbo codes with PP interleavers; specific methods to design and find PP interleavers with good bit/frame error rate (BER/FER) performance. The theoretical results are explained in great detail to enhance readers' understanding. The book is intended for engineers in the telecommunications field, but the chapters dealing with the PP coefficient conditions and with the number of PP are of interest to mathematicians working in the field.