

Random-Permutation-Matrix-Based Cyclically-Coupled LDPC Codes

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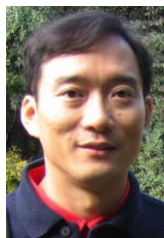
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Abstract— Cyclically-coupled quasi-cyclic low-density parity-check (CC-QC-LDPC) codes are a new class of QC-LDPC codes which can achieve excellent error performance and relatively low hardware requirement. In this paper, we modify the CC-QC-LDPC code construction by using random permutation matrices instead of circulant permutation matrices, forming the “random-permutation-matrix-based CC-LDPC (RP-CC-LDPC) code”. The objective is to achieve a better error performance under the same code length. We simulate the bit error rate using FPGA simulations. We also compare the BER results and decoder complexity of the above codes with those of regular and irregular QC-LDPC codes under the same code length and code rate.

Keyword— CC-QC-LDPC code, LDPC code, QC-LDPC code



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