



Research Letters in Communications

[About this Journal](#) [Submit a Manuscript](#) [Table of Contents](#)



Journal Menu

- Abstracting and Indexing
- Aims and Scope
- Article Processing Charges
- Articles in Press
- Author Guidelines
- Bibliographic Information
- Contact Information
- Conference Sponsorships
- Editorial Board
- Editorial Workflow
- Reviewers Acknowledgment
- Subscription Information

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Special Issues

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Research Letter

Design of Short, High-Rate DVB-S2-Like Semi-Regular LDPC Codes

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Abstract

This work focuses on high-rate ($R > 4/5$) moderate-length ($1000 \leq n < 5000$) low-density parity-check codes. High rate codes allow to maintain good quality of the preliminary decisions that are used in carrier recovery, while a moderate code length allows to keep the latency low. The interleaver of the LDPC matrix that we consider is inspired to the DVB-S2 standard one. A novel approach for avoiding short cycles is analyzed. A modified BP decoding algorithm is applied in order to deal with longer cycles. Simulations and results for the AWGN channel are presented, both for BPSK signalling and for coded modulation based on the partition $\mathbb{Z}^2/4\mathbb{Z}^2$.

- Abstract
- Full-Text PDF
- Full-Text HTML
- Linked References
- How to Cite this Article