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## Research Letter

## Design LDPC Codes without Cycles of Length 4 and 6

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## Abstract

We present an approach for constructing LDPC codes without cycles of length 4 and 6. Firstly, we design 3 submatrices with different shifting functions given by the proposed schemes, then combine them into the matrix specified by the proposed approach, and, finally, expand the matrix into a desired parity-check matrix using identity matrices and cyclic shift matrices of the identity matrices. The simulation result in AWGN channel verifies that the BER of the proposed code is close to those of Mackay's random codes and Tanner's QC codes, and the good BER performance of the proposed can remain at high code rates.

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