عنوان مقاله:

QC-LDPC Codes Construction by Concatenating of Circulant Matrices as Block-Columns

محل انتشار:

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خلاصه مقاله:

In this paper a new low complexity method for constructing binary quasi-cyclic low-density parity-check (QC-LDPC) codes is introduced. In the proposed method, each block-column of the parity check matrix H is made by a circulant matrix in a way that the associated Tanner graph is free of cycle four. Each circulant matrix in H is made by a generator column. The generator columns should be selected in a way that each associated circulant matrix and every two distinct circulant matrices are free of cycle four. The generator columns are made by row distance sets. An algorithm for generating distance sets and obtaining circulant matrices with columns of weight three is presented separately. Simplicity of construction and having a good flexible family of quasi cyclic LDPC codes both in rate and length are the main properties of the proposed method. The performance of the proposed codes is compared with that of the random-like and Array LDPC codes over an AWGN channel. Simulation results show that from the performance perspective, the constructed codes are competitive with random-like and Array LDPC codes.

کلمات کلیدی:

QC-LDPC codes, girth, circulant matrices, AWGN channel, concatenation