

Simulation of the decoding algorithms of the LDPC code

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Abstract—This report gives the explanations of the LDPC code and provides the simulation results for the decoding algorithms of the LDPC code, including the sum-product algorithm, the min-sum algorithm, and some improved min-sum algorithms, based on C programming.

I. INTRODUCTION

The error correction codes are widely applied in numerous modern communication systems, including cellular systems, Wi-Fi, digital televisions e.t.c.. This kind of coding techniques is able to revise some misinformation in communications.

Recently, the low-density parity-check (LDPC) code has defeated the turbo code and became a mainly used error correction code in 5G NR.

II. THE CONCEPT OF LDPC CODE

In this report, we specify $\mathbb{F} = \{0, 1\}$ with the operators \oplus as our field.