Compiled code study of joint parity and cyclic redundancy check

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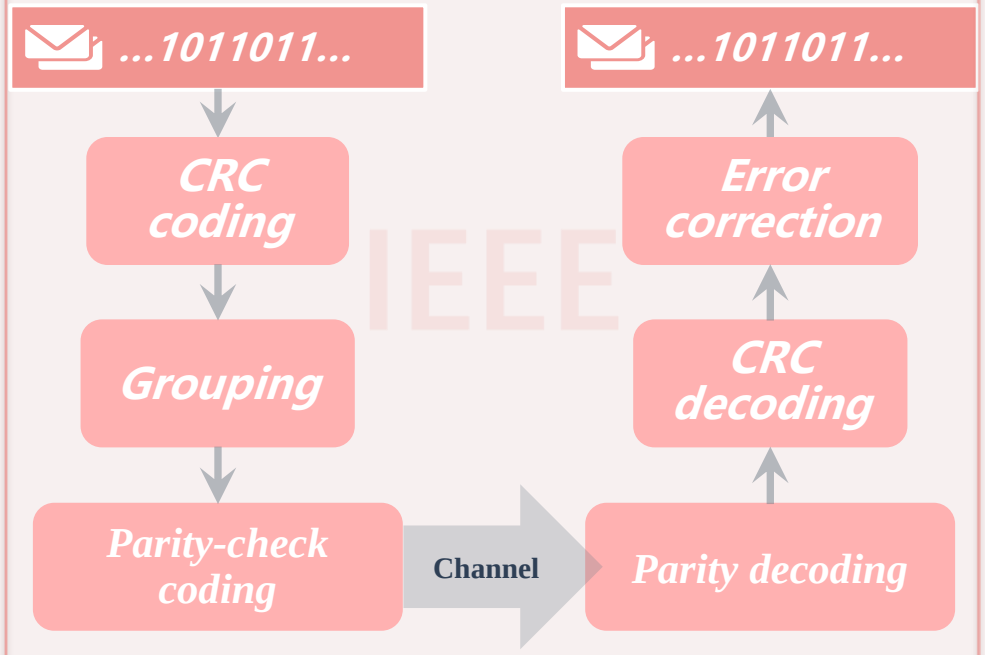
Introduction

Error correction coding, channel coding, also known as error control coding, is to add some redundant code elements, or check code elements, to form a correlated sequence of code elements--code words and to use the correlation property between code elements to detect and correct errors when decoding.

The purpose of this paper is to design a special coding method combining parity check and CRC, to determine the group of erroneous bits by using the characteristics of linear group coding, and then to accurately identify the location of erroneous bits by combining CRC check pattern, so as to perform accurate error correction.

System Structure

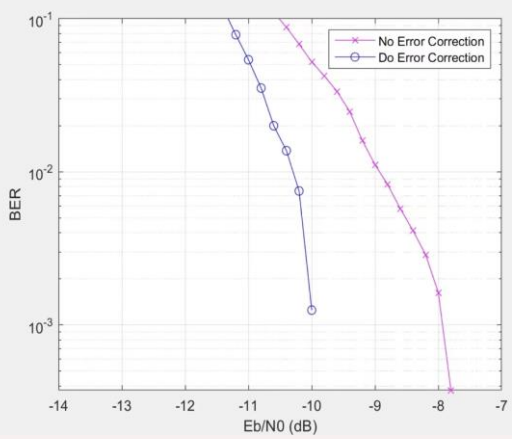


Simulation Results

From the simulation results, it can be seen that when the required error bit rate is 10^{-2}~10^{-3}, the performance of the system with error correction coding is improved by 1~2dB than that of the system without error correction coding.

When the SNR condition is in the range of -10dB~-8dB to meet the requirement, the communication system with error correction coding has an error bit rate close to 0.

Therefore, the combined parity check and CRC error correction coding mechanism can significantly improve the communication error tolerance and performance.



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