Downlink multiple access interference cancellation for NOMA based on single-channel blind separation under imperfect CSI

Jiong Li (✉ lij_2015@126.com)

Space Engineering University <https://orcid.org/0000-0003-4237-541X>

Menlan Fan

Unit 31102 of PLA

Research

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Abstract

Successive interference cancellation (SIC) is one of the most common multiple access interference cancellation techniques in the downlink of the non-orthogonal multiple access (NOMA) system. However, this interference cancellation method has two disadvantages. One is that interference cancellation performance depends on perfect channel state information (CSI). Due to the influence of factors such as channel estimation errors, time-varying channel transmission, and feedback channel transmission delay, it is difficult for the receiver to obtain accurate channel state information. Second, when the power allocated by the base station to different users is close, the multiple access interference cancellation performance is poor. Based on the blind signal separation theory, this paper proposes a multiple access interference cancellation method based on single-channel signal separation, which solves the above two problems in the downlink signal reception of the NOMA system. The simulation results show the effectiveness of the algorithm proposed in this paper.

Full Text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the manuscript can be downloaded and accessed as a PDF.

Figures

Figure 1

BSS system model.

Figure 2

Average BER performance with inter-user power allocation coefficient $\beta_k = 0.5$.

Figure 3

Impact of power allocation coefficient β_k on average BER performance with perfect CSI and SNR = 3dB.