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Abstract:
The basic wiretap channel model is considered. The aim is to maximize the rate of the reliable communication from the source to the legitimate receiver, while keeping the confidential information as secret as possible from the wiretapper (eavesdropper). The E-capacity - equivocation region, which is the generalization of the capacity - equivocation region, is investigated. The outer bound of this region is constructed.

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I. Introduction

Security is an important topic in communications. The information theoretical security is an approach, that demonstrates the possibility of transmitting confidential messages without using an encryption key. The main idea of the information theoretic security is to exploit the inherent

noises and difference between the channels to a legitimate receiver and eavesdropper. In addition, signal transmission diversity adds randomness to prevent eavesdroppers from accepting useful information while guaranteeing the legitimate receiver to obtain the information. Such an approach to guarantee secrecy has the advantage of eliminating the key management issue, resulting in lower complexity and savings in resources.

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