

High-Rate Multiuser Cooperative Diversity Systems

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Project Summary:

This project focuses on the development of practical cooperative diversity schemes. We have developed a new cooperative diversity protocol that is suitable to adopt high-rate space-time codes as well as differential space-time codes. When the channel state information (CSI) is available at the destination receivers, the use of the proposed protocol and high-rate high-diversity space-time codes permits improved communication quality and communication capacity compared to existing methods. On the other hand, the proposed protocol also provides an effective way to use differential space-time codes, which results in a useful cooperative diversity scheme for the situations where the CSI is unavailable and cannot be reliably estimated at the destination receivers.