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A Survey of Advances in Multi-User Detection in DS-CDMA

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Abstract

In Direct Sequence Code Division Multiple Access (DSCDMA) all users transmit at the same time and at the same frequency thus causing mutual interference. In such situation when the powers of the interfering signals are large compared to the desired signal, the performance of the matched filter receiver degrades. This is due to the near-far effect. One way to combat this effect is to use stringent power control, as is done in most commercial systems. Another approach is to use multi-user detection (MUD), which are near-far resistant. MUD has the more fundamental potential of raising capacity by canceling Multiple Access Interference (MAI). MUD has now developed into an important, full-fledged field in multiple access communication systems. In this paper, we present advances in algorithms for MUD.