



Linear Multiuser Receivers: Effective Interference, Effective Bandwidth and User Capacity

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Outline

Introduction

Performance Under Random Spreading Sequence

User Capacity Under Power Control

Multiple Classes and Effective Bandwidths

Antenna Diversity

Conclusions



Introduction

Three Important linear Multiuser Receivers:

Conventional matched filter, decorrelator, Minimum mean-square error (MMSE) receiver

Basic spread-spectrum model

$$\mathbf{Y} = \sum_{i=1}^K X_i \mathbf{s}_i + \mathbf{W}$$

Conventional CDMA is indeed the optimal approach when interference from other users is white. However, in general the multi-access interference is not white.