Abstract

This paper presents the performance analysis of Multi Input Multi Output (MIMO) assisted interleave based multiple-access system. In IDMA, different interleavers are used to distinguish users as against different signature sequence in a conventional code-division multiple-access (CDMA) scheme. The basic principle of IDMA is that the interleaver is unique for the users. In this work, we consider that Interleavers are generated independently and randomly. Also the IDMA technique is extended to multi user MIMO IDMA with multiuser detection. At the receiver, SIC detector is employed. The performance of the system is analyzed for different channel conditions using extensive simulation runs based on Monte Carlo simulation trials. It is shown that the IDMA scheme can achieve near single user performance in situations with very large numbers of users while maintaining very low receiver complexity. Simulation examples are provided to illustrate the advantages of the IDMA.
Reference

  MIMO Communications using interleave Division Multiple access and Low –Complexity Iterative
  Receivers”, IEEE ICASSP 2007
- Li Ping, L. Liu, K. Y. Wu, and W. K. Leung, “Interleave-division multiple-access (IDMA)
  communications,” in Proc. 3rd International Symposium on Turbo Codes & Related Topics,
  2003, pp. 173–180
- Hendrik Schoeneich, Peter A. Hoeher, “Adaptive Interleave-Division Multiple Access –A
- Prabagarane N, C.S. Nivedita, Padmini S, Vijay C, “Interleave Division Multiple Access
- Prabaagarane Nagaradjane, Arvind Sai Sarathi Vasan, Lakshmi Krishnan, “A Robust
  Space Time Co-Channel Interference Mitigation and Detection Technique for Multiuser MIMO
- Prabaagarane Nagaradjane, Arvind Sai Sarathi Vasan, Lakshmi Krishnan, Anand
  Venkataswamy “Joint VBLAST/STBC Assisted MC DS/CDMA System with Multiuser Detection”,
  pp. 2869–73.

Index Terms

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Key words

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