NEW ORTHOGONAL BINARY USER CODES FOR MULTIUSER SPREAD SPECTRUM COMMUNICATIONS (MonPmOR8)

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Abstract :

Walsh codes are perfectly orthogonal binary (antipodal) block codes that found many popular applications over many decades including synchronous multi−user communications. It is well known that they perform poorly for asynchronous multi−user communications. Therefore, the Gold codes are the preferred user codes in asynchronous CDMA communications. In this paper, new sets of binary orthogonal user codes are introduced for asynchronous spread spectrum multi−user communications. It is shown in this paper that the proposed binary user code family outperforms the Walsh codes significantly and they match in performance with the popular, nearly orthogonal Gold codes closely for asynchronous multi−user communications. We present that there are a good number of such independent code sets of different sizes available in the binary space. They might help us to increase service/multi−service capabilities of future communications systems.

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