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CDMA-SFBC Downlink Performance

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Abstract: In this paper a generic code division multiple access (CDMA)-space frequency block coded (SFBC) system for downlink transmission is proposed. Closed form expressions for the bit error rate (BER) performance of the proposed CDMA-SFBC downlink system are derived and numerically evaluated considering different scenarios. The closed form BER expressions are derived for both the M-ary phase shift keying (MPSK) and the M-ary quadrature amplitude modulation (MQAM) techniques considering different CDMA-SFBC configurations. The BER expressions are evaluated for a wide range of system parameters assuming Rayleigh fading. These parameters include M-ary size and channel estimation error variance. Such evaluations are crucial not only for system performance prediction, but also for network management, monitoring and future cross-layer design.