



CODE-AIDED JOINT CHANNEL AND FREQUENCY ESTIMATION FOR A ST-BICM MULTI-USER DS-CDMA SYSTEM (TueAmOR4)

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★ Abstract :

We consider the problem of joint multi-user detection and channel parameter estimation in a space-time bit-interleaved coded modulation (ST-BICM) scheme for an asynchronous DS-CDMA uplink transmission over frequency selective channels. The performance of standard coherent detectors relies on the availability of accurate estimates of the channel parameters and Doppler shifts. Conventionally, these are estimated using pilot symbol in the burst, a technique that reduces both the energy- and bandwidth efficiency. We will derive an iterative estimation technique, based on the SAGE algorithm, that combines pilot symbols and information from the detector in an elegant and efficient manner. We show through computer simulation that the proposed receiver considerably outperforms conventional channel estimation schemes using the same number of pilot symbols.