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Iterative interference cancellation for FBMC and reduced-CP OFDM

Abstract—Iterative decoding has been widely used to achieve reliable high data rate transmission for broadband multi-carriers communication systems. However, in Orthogonal Frequency Division Multiplexing (OFDM) systems with insufficient cyclic prefix (CP), there are significant challenges for efficient receiver design under the effect of the time-variant Long-Term Evolution (LTE) multipath channel. In this work, iterative interference cancellation (IIC) with Wiener filter (WF) channel estimation is proposed using a Low-Density Parity-Check (LDPC) decoder with different patterns of scattered and preamble pilots for Filter Bank Multi-Carrier/Offset QAM (FBMC/OQAM) and OFDM systems. Pilot-symbol aided estimation is considered. The bit error probability is compared with that of the conventional FFT- OFDM system with insufficient cyclic prefix (CP) under different environments. The results obtained show that the probability of error in the FBMC/OQAM scheme is improved in many scenarios.

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