MMSE equalization for discrete wavelet packet based OFDM

In orthogonal frequency division multiplexing (OFDM), Fourier Transform (FT) is used as a modulation technique. To avoid inter-symbol interference (ISI) in OFDM by a time dispersive channel, a cyclic prefix (CP) is used which also reduces its spectral efficiency. wavelet packet transform (WPT) as a modulation scheme has been proposed for wireless communication. In this paper, WPT based OFDM is presented and proposed using minimum mean square error (MMSE) equalizer. Equalization is a major factor in wavelets. MMSE is proposed for wavelet based OFDM (WOFDM) based on WPT and compared with zero forcing equalizer (ZFE). The performance is measured for arbitrary magnitude finite impulse response (FIR) channels in the presence of additive white Gaussian noise (AWGN) and impulse noise. Simulation results show a clear improvement in bit error rate (BER) for MMSE over ZFE equalization technique in the presence of noise.