

CF based Performance Analysis of Chirp-UWB System over Multipath Channels

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Abstract—Since the energy of chirp waveform distributes evenly in time domain, chirp waveform has the advantage of low peak-to-average power ratio. In this paper, we first employ chirp function to generate the ultra-wideband (UWB) pulse for narrow-band interference (NBI) suppression, then the simplified characteristic function (CF) method is proposed to evaluate the NBI suppression performance of the direct sequence spread spectrum binary phase shift keying (DS-BPSK) chirp pulse based UWB (Chirp-UWB) system over multipath channels. Simulation results and theoretical analysis show that the proposed CF based performance analysis of Chirp-UWB system not only superiors to the traditional Gaussian pulse based UWB system, but also outperforms the conventional approximate analysis method in accuracy.

Keyword—UWB, Chirp waveform, NBI, multipath channel, characteristic function (CF)



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