

# Abstract

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## **New Trends Towards Speedy IR-UWB Techniques**

Wireless communications have been dominated by transmission schemes based on conventional narrowband technology. Therefore, narrowband systems are unable to increase higher data-rates in wireless communication applications, which cause Inter Symbol Interference (ISI) due to multipath fading phenomenon that can be resolved at the receivers. Several implementation schemes for Impulse-Radio (IR) Ultra-Wide Band (UWB) systems have been presented. These include methods such as Transmit Reference (TR) and Frequency-Shifted Reference (FSR), which can overcome the complexity of channel estimation by transmitting reference pulses separated by a shift in time and frequency, respectively. Code-Shifted Reference (CSR) has been proposed for IR-UWB transmission. The CSR scheme with UWB systems has been found to achieve a better performance than the previous schemes. In order to improve system performance, the CSR scheme was extended to the Differential CSR (DCSR) to reduce the power used to transmit the reference pulse sequence. This Paper includes the methods of Rake Receiver, TR, Frequency-Shift Reference (FSR), emerging CSR and DCSR. A brief discussion is given for each method followed by a performance comparison between DCSR and CSR, TR and FSR Rake methods.