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WAVELET FILTERING AND PARTICLE FILTERING APPROACH FOR GPS MULTIPATH
MITIGATION

Abstract

As the development of GPS applications and the continuing improvements in the receiver techniques, multipath is still one of the major challenges for high precision GPS positioning, particularly for dynamic applications. In dynamic applications, mainly due to local environment changes, the low-frequency multipath is difficult to be removed or modeled. In this paper, we investigate the wavelet spectral theories and particle filtering to eliminate multipath effect from GPS signal. the wavelet transform is applied to the observed GPS signal in the multipath environment, and the signal is decomposed into the signal components by the wavelet multi-resolution analysis, then the wavelet shrinkage is performed by thresholding and the multipath component are separated. Finally, the multipath signal component is reconstructed and compensated to the original signal, therefore the multipath effect is mitigated. The simulation results show the proposed wavelet filter approach and particle filtering have a significant reduction in the multipath error And also we compare result that have got in wavelet filtering and particle filtering.