A novel multipath mitigation method for based array antenna GPS receiver is proposed. Considering that the direction of arrival (DOA) of line of sight signal (LOSS) is different from the DOA of multipath, and the C/A code is repeated within each navigation data bit symbol, the proposed method can improve signal to noise ratio (SNR) in the front end of receiver by constructing cross correlation between the received signal vector and its own delay signal vector, and then both max eigenvalue method and forward\|backward spatial smoothing technique are used to estimate the DOA of LOSS. Finally, multiple adaptive GSC subarrays are integrated to reduce the influence of correlated multipaths on the code tracking accuracy. Simulation results show that the method can estimate the DOA of LOSS effectively before synchronizing with the LOSS code, mitigate the corretated multipaths effectively, and obtain accurate discriminator results.





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A Multipath Mitigation Method for Array Antenna Based GPS Receiver

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