Initial Mobile Station Location Selection for Taylor-Series Algorithm

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Abstract

Wireless location is to determine the position of the mobile station (MS) in wireless communication
networks. Taylor series algorithm (TSA) is the most useful in linearizing the nonlinear equations. This
paper develops hybrid positioning methods that utilize the time of arrival (TOA) and the angle of arrival
(AOA) to locate the MS. TSA can give a location estimate of the MS in non-line-of-sight (NLOS)
environments. The quality of the TSA estimate clearly depends critically on the initial MS location. The
TSA has divergence problems when the initial estimate of the MS location is poor. To obtain the high
performance of TSA, we proposed the initial MS location selection criterion. Simulation results indicate
that the positioning accuracy of the proposed criterion is significantly improved.

Keyword：Time of Arrival (TOA), Angle of Arrival (AOA), Non-Line-of-Sight (NLOS)