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论文

# 一种新的GPS接收机C/A码跟踪环鉴别器算法

朱云龙 柳重堪 张其善 杨东凯

北京航空航天大学电子信息工程学院 北京 100083

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摘要
该文分析了GPS C/A码相位估计误差与载波频率估计误差对相关函数的影响，并推导出了相关公式。从线性，对信号幅度与载波频率估计误差的敏感性和计算量等角度分析了现有的码鉴别器算法的优缺点。基于上面的分析与研究，提出了一种新的C/A码鉴别器算法。通过理论分析与仿真实验，证明该算法有良好的线性特性，能有效抑制对信号幅度与载波频率估计误差的敏感性，且计算量低，跟踪精度高，抗多经性能好，在性能上优于已有的算法。

关键词 全球定位系统；C/A码；相关；跟踪

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# A New Code Discrimination Algorithm for C/A Code Tracking Loop of GPS Receiver

Zhu Yun-long Liu Zhong-kan Zhang Qi-shan Yang Dong-kai

School of Electronic and Information Engineering, Beihang University, Beijing 100083, China

Abstract
The impact of residual code phase and carrier frequency estimate error on correlation is analyzed in detail, and the correlation expression is given. The advantage and deficiency of these existed code phase discrimination algorithms are analyzed from the view of the Linearity, the sensitivity for signal amplitude and carrier frequency estimate error, and the computational complexity. Based on the above research, a new C/A code phase discrimination algorithm is proposed. The analysis and simulation results indicate that the new algorithm which has good linearity can restrain the sensitivity for signal amplitude and carrier frequency estimate error and multipath error effectively, and has high tracking precision and low computational complexity. Tracking performance is improved obviously by using the proposed algorithm.

Key words Global Positioning System (GPS) Coarse and Acces (C/A) code Correlation Tracking

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通讯作者 朱云龙

作者个人主页 朱云龙 柳重堪 张其善 杨东凯