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一种GPS软件接收机的同步算法研究与仿真(PDF)

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Title: The Study and Simulation of Synchronous Algorithm of GPS Software Receiver

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摘要: 空间卫星的高速运动、钟差、GPS接收机应用平台的高动态性是影响信号同步的主要因素。为了积极应对这些因素对系统同步带来的挑战,实现对导航电文准确、快速解调的目的。文中基于对圆周捕获算法、非相干全时间超前-滞后码跟踪环及Costas载波跟踪环工作机理深入研究的基础上,提出了一种GPS软件接收机的同步算法,并通过仿真验证了该算法的有效性、合理性,从而为今后我国发展多种类GPS接收机应用平台提供现实依据。

Abstract: Fast movement of space satellite, difference of clocks and high dynamics of the application platform of GPS receivers are important factors to influence signal synchronization. In order to handle the challenges of these factors on system synchronization and achieve rapid and correct demodulation of navigation data, a synchronous algorithm of GPS software receivers was put forward on the base of profound study of circumference correlation acquisition algorithms, non-correlated lead-lag code tracking loops and operational principles of Costas carrier tracking circle, whose validity and rationality were tested by simulation for providing realistic grounds for our country to develop application platforms of GPS receivers.

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