

基于服务系统的实时精密单点定位技术及应用研究

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Server-based real-time precise point positioning and its applic

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摘要

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摘要

讨论了实时精密单点定位的若干关键技术, 着重研究了实时精密钟差估计算法; 利用全球40个IGS跟踪站连续、实时的观测行实时精密卫星钟差估计, 解算出的实时精密钟差与CODE事后精密钟差具有较好的一致性, 二者互差RMS优于0.2 ns. 计的卫星钟差和IGS发布的超快速精密卫星轨道进行实时精密单点定位模拟实验, 结果表明: 经过大约15~30 min初始精密单点定位滤波收敛之后水平方向的定位精度优于5 cm, 高程方向的精度优于10 cm, 能满足在该精度级别的实时用户处理汶川地震期间震区的GPS观测数据, 结果表明实时精密单点定位能够探测地震发生期间的地面同震位移.

关键词: [GPS](#) [精密卫星钟差](#) [实时精密单点定位](#) [收敛](#)

Abstract:

Some key technologies of real-time precise point positioning (PPP) are discussed in this paper, mathematic model and method applied to estimate precise clock correction in real time is introduced, the observations obtained from GPS continuous operational reference stations are used to estimate the precise correction in real time. Comparison between the estimated precise clock correction and final precise correction published by CODE indicates that RMS of the difference between each other is better than 0.2 ns. satellite clock correction estimated in real time and ultra-rapid precise ephemeris from IGS are used to simulate real-time PPP, the results show that the positioning accuracy of real-time PPP is better than 5 cm in horizontal after half an hour convergence, the accuracy in vertical is better than 10 cm, which can satisfy the requirement of real-time user at this accuracy level. GPS observations from Wenchuan earthquake are also processed by the proposed method, its results show that the surface coseismic displacement caused by the earthquake detected by real-time PPP method.

Keywords: [GPS](#) [Precise satellite clock](#) [Real time precise point positioning](#) [Convergence](#)

Received 2009-08-17;

Fund:

国家自然科学基金项目(40874017)、武汉市晨光计划(200850731375)、创新研究群体科学基金(40721001)联合资助.

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