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通信与网络

双射频通道抗远近效应技术

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摘要：

卫星导航系统经伪卫星增强后区域性能得到较大提升，但在近场时,接收机会产生远近效应，这是码分多址体制伪卫星系统实现的难点。首先，介绍现有抗远近效应技术的特点，分析伪码互相关性在满足伪卫星工作区域需求上的不足，研究伪卫星与卫星的组合定位算法。然后，从空域的角度提出利用双射频通道加自适应调零天线来抗远近效应的技术，并搭建半实物仿真平台。最后，通过实验证明这种方法有效地提高了抗远近效应的能力，扩大了伪卫星增强系统的覆盖范围。

关键词： 远近效应 双射频通道 半实物仿真 互相关余量 自适应调零天线

Double radio frequency channel based near far effect mitigation

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Abstract:

The satellite navigation system achieves a higher regional performance when augmented with pseudolites but near field receivers are faced with the near far effect considered as a roadblock in implementing pseudolite system under code division multiple access (CDMA). Firstly the existing solutions to near far effect mitigation and their features are introduced, the insufficiency of pseudo code correlation in satisfying pseudolite working area requirements is analyzed, and the algorithm of pseudolite satellite combination positioning is studied, then a technique of near far effect mitigation by employing a receiver with double radio frequency channels and an adaptive nulling antenna is proposed from the viewpoint of airspace. Finally, through experiment on a hardware in the loop simulation platform established therefor, the effectiveness of such solution in enhancing the capability of near far effect mitigation and enlarging the coverage of pseudolite argumentation system is proved.

Keywords: near far effect double radio frequency channel hardware in the loop simulation correlation margin adaptive nulling antenna

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