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基于GPS散射信号的机载海面风场反演系统

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Airborne Ocean Wind-field Retrieval System Based on GPS Scattering Signals

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摘要

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摘要 提出了利用GPS散射信号构成机载海面风场反演系统,详细介绍了基于GPS散射信号的风场反演模型与散射信号相关功率的计算方法,给出了不同海面粗糙度下散射信号的相关功率曲线。分析了延迟映射接收机的工作模式,给出了某次飞行试验的数据分析结果。试验结果表明,文中所设计的延迟映射接收机能够准确地接收到GPS卫星信号的海面反射信号,并给出与理论分析一致的结论。

关键词: 全球定位系统 延迟映射接收机 散射信号 海面风场 反演

Abstract: The architecture of airborne ocean wind-field retrieval system based on GPS scatter signal is proposed. The theoretic models for scattering characteristics of GPS signals from ocean surface and the wind-field retrieval are discussed. The calculation of correlation power is introduced and the correlate power curves for different ocean surface are also given. The work mode of Delay Mapping Receiver (DMR) is analyzed and one of the flight tests results is taken. The test results show that the designed DMR in this paper can receive and process correctly the scattering signal of GPS satellite from the ocean surface and the conclusion can be given which is consistence with the theory analysis.

Keywords: global positioning system delay mapping receiver scattering signal ocean wind-field retrieval

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