电子与信息学报
JOURNAL OF ELECTRONICS & INFORMATION TECHNOLOGY

电子与信息学报 » 2011, Vol. 33 » Issue (3) :659-664 DOI: 10.3724/SP.J.1146.2010.00451

一种基于卡尔曼滤波的多发多收SAR成像算法

林月冠*①② 张冰尘① 洪文① 吴一戎①*

①(中国科学院电子学研究所微波成像技术国家重点实验室 北京 100190) ②(中国科学院研究生院 北京 100190)

Multi-transmitter and Multi-receiver SAR Imaging Based on Kalman Filtering

Lin Yue-guan①② Zhang Bing-chen① Hong Wen①② Wu Yi-rong①*

①(National Key Laboratory of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, Beijing 100190, China)
②(Graduate University of the Chinese Academy of Sciences, Beijing 100190, China)

摘要 | 参考文献 | 相关文章

Download: PDF (429KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘 要 该文提出了一种用于多发多收SAR的卡尔曼滤波的成像算法。该算法采用多发多收的方式获得更多的场景信息，通过降低脉冲重复频率(Pulse Repetition Frequency, PRF)获得非模糊的宽测绘带。多路发射信号采用正交编码的形式。通过卡尔曼滤波算法对场景实现了高分辨率重建。最小均方误差(Minimum Mean Square Error, MMSE)估计准则成功解决了传统成像算法中存在的多通道信号正交模糊的问题。理论分析了该算法的正确性，仿真试验验证了算法的有效性。

关键词： 合成孔径雷达 高分辨率宽测绘带 多发多收 正交模糊 卡尔曼滤波

Abstract： This paper proposes a multi-transmitter and multi-receiver SAR imaging algorithm based on Kalman filtering. In the algorithm, the application of multi-transmitter and multi-receiver offer more information about the scene and unambiguous wide swath is achieved by reducing PRF. Orthogonal coding is used in multi-transmitter channels. Kalman filtering perfectly reconstructs the scene with fine resolution and the principle of MMSE resolves the problem of ambiguity caused by orthogonal waveforms. The proposed imaging algorithm is justified by theoretic analyses and validated by digital simulations.

Keywords： SAR High resolution wide swath Multi-transmitter and multi-receiver Orthogonality ambiguity Kalman filtering

Received 2010-05-07;

本文基金:

国家自然科学基金重大项目(60890070，60890071)和中国科学院电子所知识创新工程领域前沿项目(08CX310165)资助课题

通讯作者: 林月冠 Email: linyueguan@gmail.com

引用本文:
林月冠, 张冰尘, 洪文, 吴一戎.一种基于卡尔曼滤波的多发多收SAR成像算法[J] 电子与信息学报, 2011,V33(3): 659-664

Lin Yue-Guan, Zhang Bing-Chen, Hong Wen, Wu Yi-Rong.Multi-transmitter and Multi-receiver SAR Imaging Based on Kalman Filtering[J] , 2011,V33(3): 659-664

链接本文:
http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2010.00451 或 http://jeit.ie.ac.cn/CN/Y2011/V33/I3/659

Service
把本文推荐给朋友
加入我的书架
加入引用管理器
Email Alert
RSS
作者相关文章
林月冠
张冰尘
洪文
吴一戎