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

电子与信息学报 » 2011, Vol. 33 » Issue (9) :2108-2113 DOI: 10.3724/SP.J.1146.2011.00150

大场景高分辨率星载聚束SAR修正ω-*k*算法

刘燕* 孙光才 邢孟道*

西安电子科技大学雷达信号处理重点实验室 西安 710071

A Modified ω-*k* Algorithm for Wide-field and High-resolution Spaceborne Spotlight SAR

Liu Yan Sun Guang-cai Xing Meng-dao*

National Lab of Radar Signal Processing, Xidian University, Xi’an 710071, China

摘要 基于等效斜视模型，该文给出了一种大场景高分辨率星载聚束SAR修正ω-*k*算法。针对大场景高分辨率星载SAR精确成像的需要，利用等效速度沿距离向的变化规律，改进了经典ω-*k*算法中的Stolt插值变换，实现了考虑等效速度的距离空变性的精确距离徙动校正。基于改进的Stolt插值，推导得到了沿距离向的成像指标一致的修正ω-*k*成像算法。仿真结果验证了该文成像算法的有效性。

关键词： 星载聚束SAR 等效斜视模型 修正ω-*k*算法 等效速度 Stolt插值

Abstract： Based on the equivalent-squint range model, an modified ω-*k* algorithm for wide-field and high-resolution spaceborne spotlight SAR is proposed. In order to process the wide field and high resolution spaceborne SAR data precisely, by taking use of the relationship between the range and the equivalent velocity, the Stolt mapping of the classical ω-*k* algorithm is modified. The modified Stolt mapping takes into account for the range-dependence of the equivalent velocity, so that the range cell migration is corrected accurately. Based on the modified Stolt mapping, the modified ω-*k* algorithm is presented, which guarantees the uniform image quality along range and is validated by the simulation.

Keywords： Spaceborne spotlight SAR Equivalent-squint range model Modified ω-*k* algorithm Equivalent velocity Stolt mapping

Received 2011-02-28;

本文基金:

国家自然科学基金重大项目(60890072)资助课题

通讯作者: 刘燕 Email: liuyan_1028@163.com

引用本文:

刘燕, 孙光才, 邢孟道.大场景高分辨率星载聚束SAR修正ω-*k*算法[J] 电子与信息学报, 2011,V33(9): 2108-2113

Liu Yan, Sun Guang-Cai, Xing Meng-Dao.A Modified ω-*k* Algorithm for Wide-field and High-resolution Spaceborne Spotlight SAR[J] , 2011,V33(9): 2108-2113

链接本文:

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2011.00150 或 http://jeit.ie.ac.cn/CN/Y2011/V33/I9/2108