论文　　　　　　　　最新目录 | 下期目录 | 过刊浏览 | 高级检索　　　　<< Previous Articles | Next Articles >>

基于回波数据的超高分辨率SAR通道相位误差估计与补偿

胡建民*①②   王岩飞①   李和平①*

①(中国科学院电子学研究所　北京　100190)   ②(中国科学院研究生院　北京　100039)

Channel Phase Error Estimation and Compensation for Ultra-high Resolution SAR Based on Echo Data

Hu Jian-min①②   Wang Yan-fei①   Li He-ping①*

①(Institute of Electronics, Chinese Academy of Sciences, Beijing 100190, China)
②(Graduate University of Chinese Academy of Sciences, Beijing 100039, China)

摘要	参考文献	相关文章

Download: [PDF 428KB]　[HTML] 1KB　Export: BibTeX or EndNote (RIS)　　Supporting Info

摘要 为提高SAR系统的距离分辨率，采用多通道合成的方法来提高信号带宽是当前采用的主要技术手段之一。针对多通道之间相位失配的问题，该文提出一种基于回波数据的通道相位误差估计与补偿方法。首先，建立通道相位误差的多项式模型，对通道内高阶误差进行估计和补偿；然后，在多通道合成的过程中对通道间残留的低阶误差再次进行估计和补偿。以压缩脉冲聚焦效果最优为目标，建立通道相位误差的最优化估计模型。该方法针对多通道合成的实际情况对误差估计与补偿的过程进行分解，并且数据处理中只需抽取少量回波数据作为样本，因而具有效率高、收敛速度快的优点。通过对八通道实际数据的处理和分析，验证了该方法的有效性。

关键词：合成孔径雷达　超高分辨率　通道相位误差　多通道合成　估计与补偿

Abstract：For the purpose of improving range resolution of SAR system, one of the main technical approaches is to increase the signal bandwidth by means of multi-channel synthesis. Considering the issue of phase mismatch among multi-channels, channel phase error estimation and compensation method based on echo data is proposed in this paper. Firstly, the polynomial model for channel phase error is established and high-order inner-channel error is then estimated and compensated. Secondly, the residual low-order inter-channel phase error is then estimated and compensated in the procedure of multi-channel synthesis. Aiming to optimize the focus effect of compressed pulse, the optimization estimation model for channel phase error is established. According to the actual case of multi-channel synthesis, the method decomposes the procedure of error estimation and compensation and only a few echo data are required for the data process in addition, which results in the advantage of high efficiency and fast convergence speed. The effectiveness is validated by the process and analysis of real eight-channel raw data.

Keywords：SAR　Ultra-high resolution　Channel phase error　Multi-channel synthesis　Estimation and compensation

引用本文：

胡建民, 王岩飞, 李和平.基于回波数据的超高分辨率SAR通道相位误差估计与补偿[J] 电子与信息学报, 2012,V34(7): 1602-1608

Hu Jian-Min, Wang Yan-Fei, Li He-Ping.Channel Phase Error Estimation and Compensation for Ultra-high Resolution SAR Based on Echo Data[J] , 2012,V34(7): 1602-1608

链接本文：

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2011.01080 　 或 　 http://jeit.ie.ac.cn/CN/Y2012/V34/I7/1602

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
▶ 胡建民
▶ 王岩飞
▶ 李和平