

### 严格解析谱下同航线双基SAR频率变标成像算法

陈士超<sup>①</sup> 武其松<sup>①</sup> 刘明<sup>②</sup> 邢孟道<sup>①</sup> 保铮<sup>①\*</sup>

<sup>①</sup>(西安电子科技大学雷达信号处理国家重点实验室 西安 710071) <sup>②</sup>(西安电子科技大学电子工程学院 西安 710071)

## Bistatic SAR Data Focusing Using a Frequency Scaling Algorithm Based on an Analytical Spectrum in Tandem Configuration

Chen Shi-chao<sup>①</sup> Wu Qi-song<sup>①</sup> Liu Ming<sup>②</sup> Xing Meng-dao<sup>①</sup> Bao Zheng<sup>①\*</sup>

<sup>①</sup>(National Lab of Radar Signal Processing, Xidian University, Xi'an 710071, China)

<sup>②</sup>(School of Electronic Engineering, Xidian University, Xi'an 710071, China)

摘要

参考文献

相关文章

Download: PDF (544KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

**摘要** 该文提出一种基于几何关系公式(GBF)方法推导出的TanDEM构形下严格解析双基频谱的频率变标(FS)算法, 算法中半类双基角的求解过程不再需要进行数值计算, 提高了成像的处理效率; 不同于已有的双基成像算法, 完全精确的双基谱使其不受基线长和作用距离比值大小的影响, 可以进行长基线甚至极限基线长情形下的数据处理, 仿真数据验证了该文算法的有效性; 数值方法和该文所提方法成像效果的对比实验表明所提算法可以取得和熟知的计算量大的数值计算方法几乎完全相同的成像效果, 进一步表明了该文方法的有效性和可行性。

**关键词:** 双基地合成孔径雷达 点目标精确解析谱 频率变标算法 基线和雷达作用距离比

**Abstract:** A bistatic Frequency Scaling (FS) algorithm is proposed based on an exact analytical bistatic Point Target (PT) spectrum obtained with a Geometry-based Bistatic Formula (GBF) method in TanDEM configuration. Since numerical calculation is no longer needed when calculating the important parameter- the Half Quasi Bistatic Angle (HQBA), fast imaging process is achieved. Unlike the existing algorithms, it avoids the influence of the baseline to range ratio because of its precise spectrum. Therefore, the method can handle the bistatic data with a large baseline (even in extreme conditions). The proposed method is proved using simulated data. By comparing the experimental results between the proposed method and the numerical calculation method which has a heavy computational burden, the images were almost the same, which further proves the advantages and correctness of the proposed method.

**Keywords:** Bistatic SAR (BiSAR) Exact analytical Point Target (PT) spectrum Frequency Scaling (FS) algorithm  
Baseline to range ratio

Received 2010-10-11;

**本文基金:**

教育部博士学科点专项科研基金(200807010002)和国家自然科学基金重大项目(60890072)资助课题

**通讯作者:** 陈士超 Email: chenshichao725@gmail.com

**引用本文:**

陈士超, 武其松, 刘明, 邢孟道, 保铮. 严格解析谱下同航线双基SAR频率变标成像算法[J] 电子与信息学报, 2011, V33(6): 1447-1452

Chen Shi-Chao, Wu Qi-Song, Liu Ming, Xing Meng-Dao, Bao Zheng. Bistatic SAR Data Focusing Using a Frequency Scaling Algorithm Based on an Analytical Spectrum in Tandem Configuration[J], 2011, V33(6): 1447-1452

**链接本文:**

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2010.01089 或 http://jeit.ie.ac.cn/CN/Y2011/V33/I6/1447

#### 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

- ▶ 陈士超
- ▶ 武其松
- ▶ 刘明
- ▶ 邢孟道
- ▶ 保铮