

论文

双星同中心频率多发多收的方位解模糊

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摘要

为了在星载合成孔径雷达中获得高横向分辨率和宽测绘带, 卫星可以采用横向孔径小的天线和较低的重复频率, 此时回波信号会产生方位多普勒模糊, 可以通过发射多颗卫星获得的多个空间自由度来解模糊。该文提出了沿航向分布的两颗小卫星同时独立发射中心频率相同的正负调频率信号, 利用形成的3个等效相位中心通过简化滤波权矢量计算的空域滤波法来解3个方位多普勒模糊。理论分析和仿真结果证实了该方法的有效性。

关键词 [分布式小卫星](#) [星载SAR](#) [方位模糊](#)

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Removal of Azimuth Ambiguities with Bi-satellite by Multiple Transmitting and Multiple Receiving

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Abstract

To achieve wide-swath and full azimuth resolution in space-borne Synthetic Aperture Radar (SAR), the satellite can take low Pulse Repetition Frequency (PRF) and small aperture in azimuth. Then azimuth ambiguities is inevitable. The constellation of small satellites can be used to remove azimuth ambiguities. In this paper, two satellites fly in a line is used to settle the problem. Both of the satellites transmit a Linear Frequency Modulation (LFM) signal of the same center frequency, but one is positive frequency modulation, the other is negative frequency modulation. The three phase centers resulted from the two satellites can be used to remove three azimuth ambiguities through space-time processing. An innovative method is proposed to simplify the calculating of the filter weight vector. Simulations show the validity of these methods.

Key words [Distributed micro-satellites](#) [Spaceborne synthetic aperture radar](#) [Azimuth ambiguity](#)

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