

一般构型机载双站SAR的距离徙动特性分析

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Range Migration Properties Analyses for Airborne Bistatic SAR with General Configuration

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摘要 机载双站SAR的距离徙动由其几何结构和收、发载机的运动参数共同决定,在一般构型情况下具有了2维空变性。该文建立了一般构型机载双站SAR的空间几何模型,通过对双站斜距做Taylor级数展开,得到了双站SAR在时域的距离走动和距离弯曲表达式,并利用收、发雷达的斜距解耦合公式,推导出了距离弯曲的补偿条件。通过仿真,验证了距离徙动的变化特性及其徙动补偿后残余距离弯曲的非对称性变化特点。

关键词: 机载双站SAR 一般构型 距离徙动 斜距耦合 距离徙动补偿

Abstract: The range migration of the airborne bistatic SAR is determined jointly by its geometric configuration and the motion parameters of the transmitter and receiver, so it has two-dimensional space-variant properties under general configuration. The space geometric model of the airborne bistatic SAR for general configuration is firstly proposed. Via Taylor polynomial expansions to the bistatic range, the expressions of the range walk and range cure in time domain are derived. Making use of the uncoupling expressions both the transmitter range and the receiver range, the range cure compensation condition is derived. By simulations, the variant properties of the range migration and the asymmetry variant characters of the residual range cure after the migration compensation are validated.

Keywords: Airborne bistatic SAR General configuration Range migration Slant range coupling Range migration compensation

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