

基于交叉接收的空时频编码高分辨率SAR处理方法

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A High Resolution SAR Processing Method Based on Crossed Receiving Space-Time-Frequency Coding

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摘要

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摘要 为了实现高分辨率宽测绘带SAR系统,需要在相对较小的天线孔径的约束下,提高系统的功率孔径积,并同时实现宽带信号的收发。针对上述问题,该文提出了一种基于交叉接收的空时频编码高分辨率SAR成像系统方案和处理方法,通过多子阵发射不同子带,不同波形的信号增大相控阵发射子阵的面积,提高了峰值功率,突破了传统SAR系统中功率孔径积的约束。采用交叉接收的频分方式实现大带宽信号合成,避免了复杂的后处理算法。理论和仿真验证了空时频编码的高分辨率SAR处理方法的有效性和可行性。

关键词: SAR 高分辨率 宽测绘带 空时频编码 交叉接收

Abstract: High resolution wide swath SAR requires high power aperture product under the limit of small antenna. It also needs generating and receiving wideband signal. According to these problems, a space-time-frequency coding method based on crossed receiving is presented in this paper. This method increases power by transmitting multiple sub-bands and multiple waveforms and overcomes the limits of power aperture product. It synthesizes wideband signal by the method of crossed receiving without complicated imaging algorithm. Finally simulations show its feasibility and validity.

Keywords: SAR High resolution Wide swath Space-time-frequency coding Crossed receiving

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