

一种改进的星载SAR波束优化算法

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An Improved Beam Optimization Algorithm for Spaceborne SAR Applications

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摘要

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摘要 针对传统的星载SAR波束展宽优化算法中优化变量数目多、计算时间长的缺点,该文提出了一种减少变量数目、提高优化速度的算法。该算法对常规遗传算法进行了改进,以正交多项式为天线口径分布的基函数,以多项式系数为优化变量,从而大大减少了优化的变量数目,提高了优化速度。此算法经过了长时间的改进,已经在多个型号项目中得到了广泛的应用。

关键词: 星载SAR 阵列天线 波束优化 遗传算法

Abstract: In this paper, an improved beam optimization algorithm for spaceborne SAR applications is presented to reduce the number of optimizing variables and the calculation time, compared with the traditional algorithm. This algorithm improves on the traditional genetic algorithm. In order to reduce the number of the optimizing parameters and expedite the optimization speed, the coefficients of a group of orthogonal base functions are set as the optimizing variables. This algorithm has been widely used in many projects and results with high performance are obtained.

Keywords: Spaceborne SAR Array antennas Beam optimization Genetic Algorithm (GA)

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