论文

一种弹载侧视SAR大场景成像算法

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摘要
导弹的俯冲加速运动所带来的较大距离徙动使得SAR成像难度较大。该文根据弹载SAR平台的运动特点，使用高阶逼近模型建立了SAR的回波信号模型。考虑到大场景下的距离空变问题，对目标斜距随时间的变化进行了详细的分析。结合级数反演法，得到了弹载SAR回波信号的2维频域的精确表达式。基于此式，提出了一种适用于弹载SAR俯冲加速运动下的大场景成像算法。理论分析和实验结果表明，该算法对较大场景取得了较好的成像效果，距离向和方位向分辨率都达到了理论分辨率。

关键词　弹载SAR 俯冲加速运动 距离徙动 级数反演 运动补偿

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A Large Scene Imaging Algorithm for Missile-borne Side-looking SAR

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Abstract
The large range migration produced by missile diving acceleration flight make SAR image difficult. This paper establishes the echo model of the missile-borne SAR by using the high order range model based on the characters of the missile movements. Considering the large scene, the change of the slant range is analyzed in details. Then, the two-dimensional point target spectrum is derived by the method of series reversion. A large scene imaging algorithm used for diving acceleration flight is presented. Finally, simulation results are presented to demonstrate the accuracy and validity of the proposed algorithms. The resolution of range and azimuth are identical with the theoretical values.

Key words　Missile-borne SAR Diving acceleration Range migration Series reversion Motion compensation

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