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机载聚束式SAR中空变相差的分析

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ANALYSIS OF SPACE-VARIANT PHASE ERROR IN AIRBORNE SPOTLIGHT MODE SAR

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摘要

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摘要 总结了聚束式 SAR随空间变化的相位误差的自聚焦补偿方法,并通过分析当目标存在一定运动时所产生的相位误差而分析了聚束式 SAR的空变相差的来源、散焦、对成像和图像质量的影响。文中给出了空变相差的数学模型,通过理论推导得到了相应的结论,仿真计算则证实了所得的结论。这些结论将直接应用于对已有空变相差自聚焦方法的改进,从而得到更为精确、高效、实用的空变相差自聚焦补偿算法。

关键词: 聚束式SAR 空变相差 自聚焦算法

Abstract: This paper sums up several autofocus algorithms applied to compensate space variant phase error in Spotlight SAR, and analyzes cause, property, defocus and effects on imaging of space variant phase error after phase errors coming from imaged targets with translation or rotation are analyzed. Mathematical mode of space variant phase error is given in this paper, and some conclusions are acquired on the basis of theoretical deduction, also, results of simulation support the above conclusions. Based on the traditional autofocus algorithms of space variant, a more efficient and accurate autofocus algorithm is expected while considering these conclusions.

Keywords: spot light SAR space-variant phase error autofocus algorithm

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