

## 基于多视角快拍InSAR干涉技术的前视SAR三维成像

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## Three-dimension Imaging of Forward-looking SAR Based on Interferometric Technology Through Different Snapshots

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摘要

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**摘要** 该文提出了一种基于多视角“快拍”InSAR干涉技术的前视SAR 3维成像方法。方位维依靠安置实际线性阵列以实现方位维高分辨，对应雷达发射的一次脉冲实现一次“快拍”2维高分辨成像；利用多次“快拍”不同视角获得的干涉相干相位，通过多基线InSAR联合像素处理方法，估计场景的高程信息。该文的3维成像方法对应回波数据录取时间短，数据量和运算量比较小；同时，多基线InSAR联合像素处理方法利用信号空间与噪声空间的正交性，能够有效提高信噪比，保证较高的测高精度。仿真结果验证了该文分析的正确性和算法的有效性。

**关键词：** InSAR 前视 三维成像 联合像素方法 相位解缠绕

**Abstract:** A novel forward-looking SAR three-dimension imaging method based on interferometric technology through different snapshots is proposed in this paper. Practical linear array antennas are laid to achieve high azimuth resolution in azimuth dimension and each high resolution snapshot in two dimensions is achieved corresponding to only one transmitted pulse. The interferometric phase information is extracted from snapshots with different squint angles for height estimation through multi-baseline interferometric technology. The main characteristics of the proposed three-dimension imaging method lie in both short data acquisition time, low data amount and computational load. Meanwhile, signal-to-noise ratio is improved through multi-baseline InSAR combined pixels method to ensure high height precision. Numeric simulation results confirm the validation of the proposal.

**Keywords:** InSAR Forward-looking Three-dimension imaging Combined pixels method Unwrapped-phase

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