

TOWARDS AIRBORNE SINGLE PASS DECIMETER RESOLUTION SAR INTERFEROMETRY OVER URBAN AREAS

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ABSTRACT:

Airborne cross-track Synthetic Aperture Radar interferometers have the capability of deriving three-dimensional topographic information with just a single pass over the area of interest. In order to get a highly accurate height estimation, either a large interferometric baseline or a high radar frequency has to be used. The utilization of a millimeter wave SAR allows precise height estimation even for short baselines. Combined with a spatial resolution in the decimeter range, this enables the mapping of urban areas from airborne platforms. The side-looking SAR imaging geometry, however, leads to disturbing effects like layover and shadowing, which is even intensified by the shallow looking angle caused by the relatively low altitudes of airborne SAR systems. To solve this deficiency, enhanced InSAR processing strategies relying on multi-aspect and multi-baseline data, respectively, are shown to be necessary.

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