A Novel Analysis and Processing of Space-borne SAR Signals

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Abstract

A novel analysis of space-borne Synthetic Aperture Radar (SAR) signals in two-dimensional time domain is presented. In our analysis, the range and azimuth components are separately considered and therefore a range migration correction technique is introduced. The proposed algorithm approximates the two-dimensional filter with the cascade of two one-dimension filters. Simulation results are given to substantiate the validity of our analysis. Finally, processed image from ERS-1 satellite SAR raw data is presented to show the performance of our processing algorithm.