SAR/INSAR image processing based on modified spatially variant apodization

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Abstract

The existing Spatially Variant Apodizations (SVAs) either cannot depress the sidelobes effectively or reduces the energy of the mainlobe. To improve this, the modified SVA (MSVA) of this paper, which expands the traditional filter from 3-tap to 5-tap and sets relevant parameters according to different sampling rates, can get the excellent result that satisfies constrained optimization theory. This method is suitable for any Nyquist sampling rate, and can both depress the sidelobes effectively and keep the energy of the mainlobe and the resolution of the image; at the same time, this method can improve the SNR of the image partly and enhance the coherence of image pair. The method can reduce sidelobe levels more effectively than classical amplitude weighting, while maintaining the image resolution, and improve the accuracy of the interferometric operation, which is demonstrated by the result of the experiment.

References


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