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NARROW BAND INTERFERENCE SUPPRESSION FOR MULTI-CHANNEL SAR-GMTI SYSTEM

Abstract

Ground Moving Target Indication (GMTI) and relocation is an essential function of Synthetic Aperture Radar (SAR) system in the future, and is an important problem of the SAR signal processing. When certain high powers unknown signal comes into the SAR system, there will be a great deal of speckle on the SAR image, which not only degrades the image quality badly but also worsens the coherence of the multi-channel SAR-GMTI system. The decorrelation of the interference will increase the clutter residue, which worsen the performance of the GMTI. So, the interference must be suppressed before the GMTI operation. In this paper, we discuss the advantages and the disadvantages of the conventional narrow band interference suppression methods, and then propose a new method based on correlation coefficient of the different channel echo, and then use the notch filter to eliminate the interference. The new method takes full advantage of the spatial degree to indentify the precise frequency distributing of the interference, and reserves the scene echo as much as possible to improve the performance, which can overcome the limitation of the no-parametric methods. Finally, the validity of the proposed method illustrated with experimental tri-channel airborne SAR data. The result indicates that with the interference the disturbed SAR image can not be used for GMTI, and the image without the interference makes a good performance on clutter suppression.