

难的问题;在去除噪声的同时,最大程度地保留了细节信息,从而保持了干涉条纹的细节相位信息。由实验结果可以看出,采用矢量分离式小波滤波对干涉图进行滤波处理,能够得到较好的滤波效果,并且具有良好的相位保持能力和细节保持能力,它对于干涉图的相位展开及整个 InSAR 处理具有重要的应用价值。

为了提高滤波效果,在后续研究中,可采用矢量小波、复数小波等方法进行滤波方法研究。

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Filtering for InSAR Interferograms by Vector Decomposing and Wavelet Transformation

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Abstract: A new filtering algorithm for InSAR interferogram is proposed. First, the raw interferogram is mapped to unit vectors. Then the vectors are decomposed to two parts: the sine signal and the cosine one. Secondly, the sine and the cosine signals are filtered by wavelet threshold method. Finally, the filtered interferogram is calculated by the filtered sine and cosine signals. In order to evaluate the precision of filtering, a new evaluation method is presented, which uses the RMS of the phases between interferograms before and after filtering. Different types of interferograms are employed in experiments. The results show that the proposed filtering method is valid.

Key words: InSAR; interferogram; wavelet filtering; vector decomposition