

Heliograph Imaging Based on Compressed Sensing with Mean Shift Regularization

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Heliograph imaging is the process of reconstructing a solar image from sparse frequency domain data, and the compressed sensing (CS) algorithm has shown potential to accurately recover images from highly undersampled data. However, CS is sensitive to noise and often suffers from undesired convolutive artifacts. In this paper, we present an improved CS algorithm with mean shift regularization, which helps to suppress the convolutive artifacts and reconstruct the solar fine structures. A set of experiments have been conducted using both synthetic and real images. The results demonstrate that our proposed algorithm has much smaller reconstruction errors than those of other methods.

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