



## **Real-Time flare detection using guided filter**

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A procedure is introduced for the automatic detection of solar flare using full-disk solar images from Huairou Solar Observing Station (HSOS), National Astronomical Observatories of China. In image preprocessing, median filter is applied to remove the noises. And then we adopt guided filter, which is first introduced into the astronomical image detection, to enhance the edges of flares and restrain the solar limb darkening. Flares are then detected by modified Otsu algorithm and further threshold processing technique. Compared with other automatic detection procedure, the new procedure has some advantages such as real time and reliability as well as no need of image division and local threshold. Also, it reduces the amount of computation largely, which is benefited from the efficient guided filter algorithm. The procedure has been tested on one month sequences (December 2013) of HSOS full-disk solar images and the result of flares detection shows that the number of flares detected by our procedure is well consistent with the manual one.