

Example of Mini-Erupting Filaments and the Related Magnetic Fields

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In the present study, we have analyzed video magnetograms and high resolution H-alpha images of a solar quiet region to probe the morphological evolution of small-scale H-alpha features like mini-filament and the corresponding magnetic fields. The present observation has been performed for 7 hours to get time sequential longitudinal magnetograms and H-alpha images at Big Bear Solar Observatory on April 18, 1997. Among the whole data, successive images during 5 hours with a field of view of $150'' \times 150''$ have been selected to make H-alpha and magnetogram movies covering the same area.

We have investigated the temporal evolution of a few interesting features appearing on the H-alpha movie. Some has characteristics of mini-filaments and others have those of macrospicules. The definite discrimination between these two features still remains unresolved. Comparing these features with the magnetic field at the same position, cancelling magnetic poles have been clearly identified. Therefore, no matter what such features are called, it can be seen that they have a close relationship with small-scale magnetic reconnection process. It means that such process is important not only for understanding large-scale features like flares but also much smaller-scale H-alpha features. These observed phenomena seem to be more prevalent throughout the solar surface than we expected.