# Bright Points in G-Band and Ca IIH Images from Hinode

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**Summary.** A 1-hour long time sequence of the G-band and CaII H line images obtained on April 14, 2007 from 17:00 hrs to 18:00 hrs taken simultaneously by Solar Optical Telescope onboard Hinode mission have been analyzed. The Solar SoftWare (SSW) in IDL is used to analyze these images. In each sequence, we selected 20 BPs and derived the light curves. A power spectrum analysis on the time series of G-band and CaII H bright points (GBPs and CaBPs) data has been performed to determine the periods of intensity oscillations. The power spectrum of GBPs and CaBPs reveal that they are associated with 2 to 5 min and 3 to 4 min period of intensity oscillations respectively. The comparison study between the light curves of GBPs & CaBPs suggests that there is a phase difference and that indicates for propagating waves responsible for heating of the chromosphere at the sites of the CaII bright points.

## 1 Observations, Analysis and Results

We use a 1-hour (17:00 UT - 18:00 UT) time sequence of G-band and CaII H-line images obtained on April 14, 2007 from Solar Optical Telescope (SOT) onboard the Hinode mission observed simultaneously near the center of the solar disk in a quiet region. We selected 20 GBPs and 20 CaBPs for analysis and marked them as gbp1, gbp2,...gbp20 and cabp1, cabp2,...cabp20 (see Fig.1) respectively.

We derived the cumulative intensity values of the GBPs and CaBPs by placing the square boxes on the images covering the selected GBPs and CaBPs. We summed up all the pixel intensity values covered by the box. The light curves of all the bright points have been derived. It is clearly seen from the light curves that the bright points show an intensity oscillations. We performed the power spectrum analysis to determine the period of intensity oscillations associated with GBPs and CaBPs. For example in Fig2, we have shown the power spectra of GBP1 and CaBP1. We find that the G-band bright points are showing in the range of 2 to 5 min period of intensity oscillations where as CaBPs show an intensity variations in the range of 3 to 4 min. The

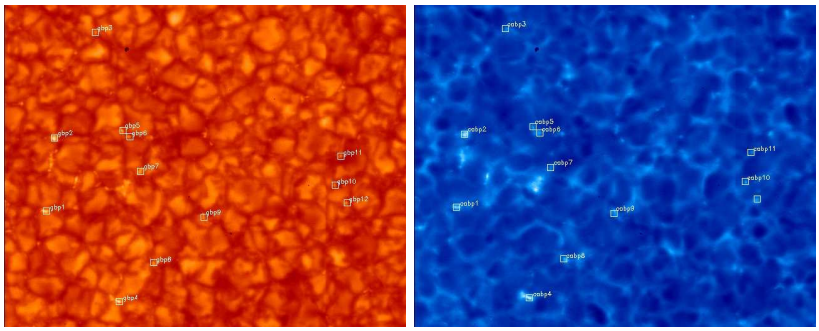

**Fig. 1.** The G-band and Ca II H line images obtained simultaneously on April 14, 2007. The bright points selected for analysis are marked on both the images.

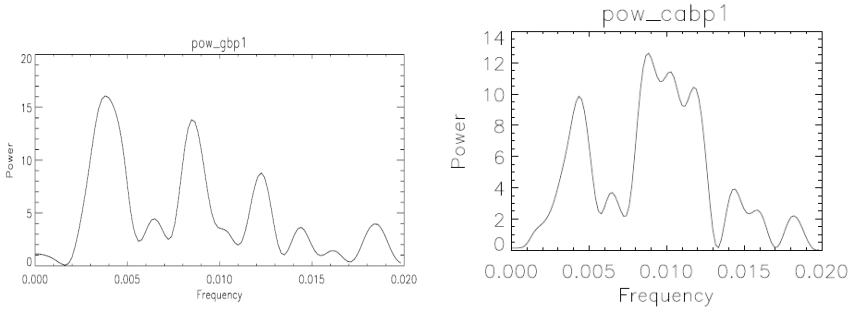


**Fig. 2.** Power spectra derived for the time series of GBP1 and CaBP1. Frequency in Hz.

light curves of any two bright points showing a phase difference between the GBPs & CaBPs . This suggests that the waves propagate from the photosphere to the chromosphere. However, a Fourier phase difference analysis is needed to determine the phase lag & clarify on the nature of waves responsible for the heating of the chromosphere at the sites of CaII H bright points.

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