Determining coronal bright point size via cross-correlation using multi-wavelength images from AIA/SDO

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ABSTRACT

Subject headings: Sun: corona-Sun: bright points-

1. Introduction

Bright points in the junctions between super-granules in the solar photosphere can be seen in the upper layers of the solar atmosphere in the form of coronal bright points. The cross-sectional area of these BPs is known to increase in height as the density decreases and temperature increases (source).

2. Data

This analysis was carried out on data from AIA/SDO (Lemen et al. (2012)). A grayscale image of the full disk at the start of the time series () is shown in figure A single coronal bright point was located and analyzed in each passband, of which there were seven total. Each of these wavelengths corresponds to emission from a different ion, hence a different temperature/height above the solar photosphere. An image of the bright point in each of the wavelengths is shown in figure also at the beginning of the time series.

The relevant values for each passband are given in table 1.

3. Analysis

The intensity of each BP as a function of radius gives a rough visual estimate of the size of the BP. Here the estimate was taken a step further, using the cross-correlation of the BP pixels through the entire time series.

Wavelength [Å]	Temperature [K]	Height [km]
94	10^6	11
131	10^6	11
171	10^6	11
193	10^6	11
211	10^6	11
304	10^6	11
335	10^6	11
1600	10^6	11
1700	10^6	11
4500	10^6	11

Table 1: stuff

4. Results

5. Conclusion

REFERENCES

Lemen, J. R., Title, A. M., Akin, D. J., et al. 2012, Sol. Phys., 275, 17