

Determining coronal bright point size using cross-correlation techniques and data from *AIA/SDO*

Laurel Farris¹, R. T. James McAteer¹

¹New Mexico State University

1. Introduction

Background

Coronal bright points (CBPs) are seen ubiquitously in the solar atmosphere at several EUV and X-ray bandpasses. They are thought to be associated with converging areas of magnetic flux at opposite polarities.

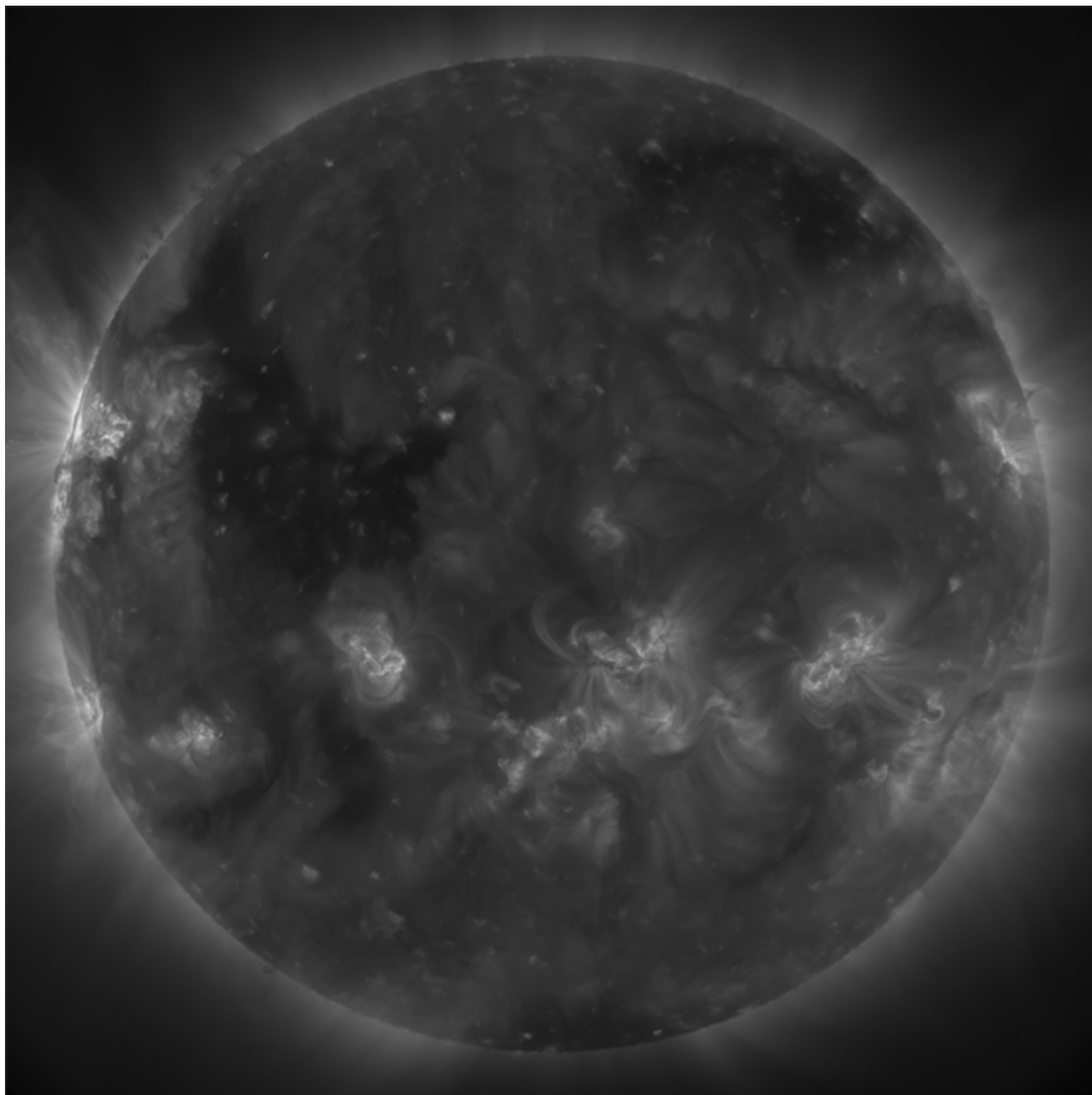


Figure 1: Full disk in AIA 193Å bandpass. A coronal hole is present in the upper left region.

Motivation

Previously, the size of CBPs has been determined using the intensity at a single point in time, compared to the background intensity.

2. Observations

Multi-wavelength data from the Atmospheric Imaging Assembly (AIA) on board the *Solar Dynamics Observatory (SDO)* was used to investigate potentially different results over different temperatures and/or heights in the solar corona.
Paragraph again

3. Methods

Mathematical

The formula for cross-correlation is given by:

$$f(t) \star g(t) \equiv f(t) * g(-t)$$

Numerical

For programming, the cross-correlation is calculated using:

$$\sum_0^{N-1}$$

4. Results

By employing the algorithm from McIntosh et al. (2008), the inner structure of the CBP was revealed, most apparent in the 193Å data. By cross-correlating each reference pixel with every other pixel in the image, a ring-shaped structure was revealed around this core, with low values of cross-correlation in between.

5. Conclusion

References

