Analysis of dynamics of loops in an active region associated with a small C-class flare

P. Gomory, Sternevandt Institute, Utah University, P.O. Box 80000, 3068 TA Utah, The Netherlands, gomor@berkeley.edu
J. Rybak, A. Kutera, Astronomical Institute of the Slovak Academy of Science, 05040 Tatranska Lomnica, Slovakia
H. Wöhl, Karpfengeeinst Institute for Sonnenphysik, Schöneck, 6, 79104 Freiburg, Germany

Abstract: Analysis of the magnetic loop field before and during a C-3 class flare in NOAA AR 10145 is presented using data from the SUMO/CDI spectrometer. The inflow pattern of the magnetic field before the active region was determined by the SUMO/CDI spectrometer. Several precursor events and magnetic impulsive phase of the flare were detected at different positions along the AR 10145 in all spectral lines. Analysis of the two selected chromospheric processes with clear relations to the main impulsive phase and the main impulsive phase of the flare itself show time delays between chromospheric transition region and coronal occurrence of events. Significant upflows during precursor events and peaks of chromospheric and upflow velocities during main impulsive phase. These findings indicate that the chromospheric emission process is the driving mechanism responsible for the observed flare emission.

Introduction

The measurement of magnetic field lines is the most accepted method to study solar magnetic activity. The reconnection of magnetic field lines in the solar corona can lead to a loss of magnetic energy, and the release of magnetic energy can be detected as a solar flare. The measurement of magnetic field lines is also useful for understanding the behavior of magnetic field lines in the corona. The reconnection of magnetic field lines in the solar corona can lead to a loss of magnetic energy, and the release of magnetic energy can be detected as a solar flare. The measurement of magnetic field lines is also useful for understanding the behavior of magnetic field lines in the corona.

Data

- Instrument: CDI/NSI spectrometer [Horn & Wöhl, 1995]
- Spectral lines: Hα 531.0, OI 630.0, SiIII 5067.0 Å
- Exposure time: 20 s, exposure 15 s

Results

Peculator 1

- Similarity of the magnetic field in the Hα line and OI lines
- Global behavior of upflows in the Hα line and OI lines
- Similarity of the magnetic field in the Hα line and OI lines
- Global behavior of upflows in the Hα line and OI lines

Peculator 2

- Similarity of the magnetic field in the Hα line and OI lines
- Global behavior of upflows in the Hα line and OI lines

Main impulsive phase 3

- Similarity of the magnetic field in the Hα line and OI lines
- Global behavior of upflows in the Hα line and OI lines

Discussion and conclusion

- The chromospheric-transition region occurrence of events is a common feature in the occurrence of solar flares. The reconnection of magnetic field lines in the solar corona can lead to a loss of magnetic energy, and the release of magnetic energy can be detected as a solar flare. The measurement of magnetic field lines is also useful for understanding the behavior of magnetic field lines in the corona.

Outlook

- Analysis of the magnetic field lines in the Hα line and OI lines
- Global behavior of upflows in the Hα line and OI lines
- Similarity of the magnetic field in the Hα line and OI lines
- Global behavior of upflows in the Hα line and OI lines

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References

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