

3D MHD NUMERICAL SIMULATION OF ACTIVE REGIONS ON THE SOLAR ATMOSPHERE

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Active regions are the host of two of the most powerful events occurring in the solar atmosphere, flares and coronal mass ejections. It is known that the energy used to feed both events comes from the strong magnetic field associated to the active region. However, it is still not known how the magnetic energy is build up and why it is suddenly released. In this work we show the results of a 3D MHD numerical simulation of the active region 8210 associated to many flares and one coronal mass ejection. This active region was visible in the solar disc between April 26th 1998 and May 2nd 1998. Here we test the hypothesis that horizontal motions of a negative magnetic polarity are important for the energy build up in the active region and contribute to the occurrence of the M Class flare observed on May 1st 1998, at around 23:00 UT. We consider that the magnetic energy is stored as electric currents in the solar atmosphere and it is converted to thermal energy by joule heating.

Active region, Sun, MHD simulation

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