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Magnethydrodynamic simulation of solar chromospheric evaporation jets in the oblique coronal magnetic field

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We reproduce solar chromospheric evaporation jets in the oblique coronal magnetic field by two-dimensional MHD simulation with heat conduction effect. The solar chromospheric evaporation jets are caused by the heat of the magnetic reconnection between the emerging flux and the preexisting coronal magnetic field. Miyagoshi & Yokoyama (2004) performed two-dimensional MHD simulation based on this scenario and succeeded in reproducing the evaporation jet. In this simulation, the preexisting coronal magnetic field was parallel to the convection zone to keep the initial condition. On the other hand, most of the observed chromospheric evaporation jets are thought to occur in the oblique coronal magnetic field. In our simulations, we assume the energy damping in the heat conduction and succeed in keeping the initial condition of the oblique coronal magnetic field and reproducing more realistic evaporation jets.

In the recently observation, EUV imaging spectrometer aboard Hinode observed hot jets and cool jets simultaneously and revealed the detailed structures of the velocity of the jets. Our simulations succeed in reproducing the high density jets and also show that hot jets and cool jets are exist simultaneously. We will compare the characteristics of the observation to our simulations and discuss the acceleration of the jets.

Keywords: MHD simulation, solar jet, chromospheric evaporation