

M09a Numerical study of fast and slow MHD waves in heating solar magnetic chromosphere by realistic simulation

Yikang Wang, Takaaki Yokoyama (The University of Tokyo), Haruhisa, Iijima (Nagoya University)

The problem of how to heat the solar chromosphere is still under debate, especially in the low-beta magnetic chromosphere. MHD waves are candidates for energy transportation and heating, which have been studied by previous works both theoretically and observationally. Most of the previous numerical simulation studies focus on only a single mode of wave in artificial settings. On the other hand, there are also studies by realistic simulations but these studies are usually used for spectra synthesizing for comparison with observations, without discussing physical processes in detail. In our study, we perform two-dimensional realistic MHD simulation by RAMENS code with modification on non-LTE radiation treatment (Carlsson & Leenaarts 2012). We catch each shock front and analyze its mode and contribution to heating. Our result shows that fast waves play a more dominant role in heating the magnetic chromosphere than slow waves. These low-beta fast waves are considered to be generated by mode conversion from acoustic waves in the high-beta region.