

**Solar MHD phenomena observed by Hinode**Joten Okamoto¹¹ NAOJ, Japan

Coronal heating and the acceleration of the solar wind are unsolved problems in solar physics. The propagation of Alfvénic waves along magnetic field lines is one of the candidate mechanisms to carry energy to large distances from the surface and heat the coronal plasma.

Such waves can be observed in fine structures of prominences. In particular, the observations by the Hinode satellite have directly resolved small-scale transverse oscillations of field lines as a result of Alfvénic waves. These waves had a period of 2-5 minutes and the velocity amplitudes are up to 20 km/s. The waves have enough power to heat the corona.

More recently, the IRIS satellite provides spectral information of fine structures to investigate the detailed property of these waves. With collaborative observations of IRIS and Hinode, we found a signature of resonant

absorption and associated heating, which is a long hypothesized mechanism to efficiently convert and dissipate transverse wave energy into heat. This is the first observational evidence for wave-related heating in action, one of the candidate coronal heating mechanisms.

I will introduce some other results observed by Hinode as well as the researches mentioned above.

References

(mainly)

Okamoto et al. 2007, *Science*, 318, 1577Okamoto & De Pontieu 2011, *ApJ*, 736, L24Okamoto et al. 2015, *ApJ*, 809, 71