WAVE PROPAGATION IN MULTIPLE FLUX TUBES AND HEATING OF THE CHROMOSPHERIC NETWORK

S. S. Hasan [1], A. van Ballegooijen[2] and O. Steiner[3]

[1] *Indian Institute of Astrophysics, Koramangala, Bangalore 560034, India;*
[2] *Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge MA 02138, U.S.A.;*
[3] *Kiepenheuer-Institut für Sonnenphysik, Schöneckstrasse 6, D-79104 Freiburg, Germany*

We use 2-D MHD calculations to examine wave propagation in multiple flux tubes in the magnetic network. This is a continuation of our earlier work on the response of a *single* flux tube due to transverse motions of its footpoints. We now extend the analysis to consider a more realistic model of the network consisting of three vertical flux tubes which have a filling factor of about 10% in the network. The tubes expand with height and merge with neighboring tubes at a height of around 600 km. We apply a transverse velocity perturbation with period of 24 s uniformly along the lower boundary located at the base of the photosphere. This generates (a) vertically propagating fast and slow MHD waves within the flux tube; and (b) acoustic waves generated at the flux tube edge near the lower boundary that propagate spherically outwards. Our simulations enable us to study the complex wave pattern due to waves generated in the individual tubes as well as their interaction with those emanating from adjacent tubes. Our results show that dominant heating of the chromosphere occurs due to slow magnetoacoustic waves in a region that is close to the flux tube axis. We examine observational implications of these results.