

SEISMOLOGY OF KINK OSCILLATIONS IN CORONAL LOOPS: TWO DECADES OF RESONANT DAMPING

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The detection of rapidly damped transverse oscillations in coronal loops by Aschwanden et al. and Nakariakov et al. in 1999 gave a strong impetus to the study of MHD waves and their damping. The common interpretation of the observations of these oscillations is based on kink modes. In this review I will focuss on resonant absorption as damping mechanism for kink oscillations in coronal loops. I will start with the 1988 paper by Hollweg and Yang and will discuss subsequent developments in theory and its applications to seismology of coronal loops. I will address the consistent use of observations of periods and damping times as seismological tools within the framework of resonant absorption. I will discuss how periods and damping times are related to density contrast, inhomogeneity length scale and internal Alfvén velocity. I will explain the recent finding that within the framework of resonant absorption infinitely many equilibrium models can reproduce the observed values of periods and damping times. Although infinitely many equilibrium models are possible, they all have their internal Alfvén velocity constrained to a narrow interval.