DAMPING OF NON-ISOTHERMAL HOT CORONAL LOOPS OSCILLATIONS

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Recently, high resolution observations by the SOHO and TRACE spacecrafts have identified oscillating coronal loops and propagating waves along magnetic loops in the solar corona. These new discoveries established a new discipline that is known as coronal or magneto-seismology. The importance of this lays in the potential for the diagnostics of coronal structures and retrieving knowledge about the mechanism(s) of coronal heating. In our presentation we study the influence of gravitational stratification in non-isothermal coronal loops of semicircular shape, considering the effects of the sources of energy dissipation, namely thermal conduction, compressive viscosity, and radiative cooling and heating, on the dissipation of longitudinal standing waves. The nonlinear loop equations are solved numerically using a 1D, finite-difference code based on a temporally and spatially second order accurate, semi-implicit, Lagrangian solver. We analyse how the non-isothermal temperature profile affects and modifies the damping time of the loop oscillation.