THE EFFECT OF THE SOLAR CORONA ON THE ATTENUATION OF NON-ADIABATIC PROMINENCE OSCILLATIONS

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One of the typical features shown by observations of solar prominence oscillations is that they are damped in time and that the values of the damping times are usually between one and three times the corresponding oscillatory period. However, the mechanism responsible for the attenuation and the influence of the external coronal medium are

still not well-known. Here, we assume non-adiabatic effects (thermal conduction, radiation losses and heating) as damping mechanisms and their role on the attenuation of oscillations is evaluated. We consider an equilibrium made of a prominence plasma slab embedded in a coronal medium and take into account two possible orientations of the magnetic field, parallel and transverse to the slab axis. We find that non-adiabatic effects are efficient damping mechanisms for magnetoacoustic modes, but their importance and the influence of the corona are different for each solution. In the range of observed wavelengths of prominence oscillations, radiation from the prominence plasma is responsible for the damping of internal modes, coronal conduction dominates the attenuation of external modes, and the combined effect of both mechanisms governs the damping of hybrid and global modes.