

DAMPED TRANSVERSAL OSCILLATIONS OF TWO INTERACTING CORONAL LOOPS

I. Arregui¹, J. Terradas^{1,2}, R. Oliver¹ and J. L. Ballester¹

¹*Departament de Física, Universitat de les Illes Balears, E-07122 Palma de Mallorca, Spain*

²*Centrum voor Plasma Astrofysica, KULeuven, Celestijnenlaan 200B, B-3001 Heverlee, Belgium*

TRACE observations often show the collective excitation of oscillations in a system of coronal loops rather than in individual structures. However, most of the theoretical models used for the study of these oscillations make use of isolated single coronal loop models concentrating the analysis on the fundamental MHD kink mode. In this work, first, the transversal oscillatory modes of a system of two close coronal loops are studied. For these solutions, the period and the damping rate due to resonant coupling to Alfvénic motions are computed as a function of several equilibrium parameters, such as the density contrast, the width of the inhomogeneous density layers surrounding the loops and the distance between them. The parameters that determine when oscillations of individual loops in such a system cannot be considered independent are quantified for realistic parameter values. Second, the time-dependent problem, for given initial disturbances, is solved and the conditions under which these oscillations are excited and then damped are investigated.