

SEISMOLOGY OF OPEN AND CLOSED MAGNETIC STRUCTURES - SIMULATIONS

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We use self-consistent 3D radiative MHD simulations to study the excitation, propagation and mode conversion of MAG waves in open and closed magnetic structures. The simulations include the upper convection zone, photosphere, chromosphere, transition region and corona with a realistic equation of state. The equation of radiative transfer is solved along 48 rays including the effect of scattering in spectral lines. Optically thin radiative losses are included in the transition region and corona. Optically thick radiative energy exchange in the chromosphere in lines from hydrogen and singly ionized calcium is included using an escape probability method. Conduction is treated implicitly using a multi-grid method. The observability of waves present in the simulations is also studied through the detailed calculation of observables.