Applied Maths Seminar abstract – 27/09/17

Our Sun is a restless plasma with a strong and evolving magnetic field, making magnetohydrodynamics (MHD) an essential tool to describe its behaviour. The Sun’s atmosphere, where magnetic forces dominate, is permeated by MHD waves that can be used as an indirect method for diagnosing difficult-to-measure parameters of the solar plasma. This technique is known as solar magneto-seismology. In this talk, we will introduce a novel equilibrium structure consisting of two parallel discontinuities with a uniform magnetic field in the central region. We perturb the system and illustrate the eigenmodes using 3D animations to demonstrate the change in character of symmetric MHD wave modes when the system is asymmetric. We derive two methods that use this asymmetry to estimate the strength of the background magnetic field. This advances the field of solar magneto-seismology in locally asymmetric structures in the solar atmosphere.