Morton, Richard - Northumbria University

Can the Sun's internal acoustic modes energise the corona?

Recent advances in both imaging and spectroscopy have revealed that the magnetic field of Sun's corona is constantly shaking quasi-periodically under the influence of MHD wave motions. The shaking of the coronal magnetic field can be interpreted in terms of highly incompressible kink wave modes, whose restoring forces is magnetic tension and the waves propagate vorticity, hence take on an Alfvenic character. It is typically assumed that such waves are driven by the random, horizontal turbulent granular motions of the photosphere, which buffets the footpoints of the magnetic fields. Recently, it has been demonstrated theoretically that internal acoustic modes (p-modes) could play an important role in exciting coronal Alfvenic waves through a series of mode conversion processes. I will discuss evidence from the Coronal Multi-channel Polarimeter (CoMP) instrument that supports this idea and indicates that the p-modes are significant in energising the entire corona, challenging a long held assumption about the process of wave energy transfer through the Sun's atmosphere.