

## Giant pipe organ in the solar atmosphere

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Astronomers have found that the atmosphere of the Sun plays a kind of heavenly music. The magnetic field in the outer regions (the corona) of our nearest star forms loops that carry waves and behave rather like a musical instrument.

In a talk on Thursday 19 April at the Royal Astronomical Society National Astronomy Meeting in Preston, Dr Youra Taroyan and Professor Robert von Fay-Siebenburgen of the Solar Physics and Space Plasma Research Centre (SP2RC), University of Sheffield will explain the origin of these magnetic sound waves. They will present a series of animations and sound files that demonstrate how these dramatic events appear and fade away rapidly.

In recent years scientists have worked hard to better explain and predict the dynamic behaviour of the Sun. For example, missions like STEREO and Hinode watch as material is ejected towards the Earth, events which are controlled by the solar magnetic field.

In their research, led by Professor von Fay-Siebenburgen, SP2RC scientists combined observations with new theoretical models to study the magnetic sound waves that are set up along loops in the corona. "These loops can be up to 100 million kilometres long and guide waves and oscillations in a similar way to a pipe organ." - says Dr Taroyan

The acoustic waves can be extremely powerful and reach amplitudes of tens of kilometres per second. Professor von Fay-Siebenburgen adds, "we found that the waves are often generated at the base of the magnetic



pipes by enormous explosions known as micro-flares. These release energy equivalent to millions of hydrogen bombs. After each microflare, sound booms are rapidly excited inside the magnetic pipes before decaying in less than an hour and dissipating in the very hot solar corona."

Source: Royal Astronomical Society

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