

# Sun's corona is both hot and kinky



**Astrophysicists are having a heated debate over the wave structure of the Sun's Corona - a debate which may one day influence solar weather forecasting and the theory behind fusion reactors.**

The Sun's core is about 6000 degrees C, but its outer layer, the Corona, which is filled with a strong magnetic field, is 200 to 300 times hotter.

Last year American scientists thought they had cracked this paradox with research showing how high-energy Alfvén wave structures could super-heat the Corona.

The astrophysicists said they could detect Alfvén waves within the Corona – waves that have a corkscrew motion along the magnetic field at supersonic speed.

They published their results in prestigious journal *Science*.

However, scientists at the University of Warwick say these are well known and earlier discovered magneto-acoustic kink waves. These, they say, are a better fit for the complex magnetic fields of the Sun's outer layer.

They've published their results today in the *Astrophysical Journal Letters*.

Warwick astrophysicist Dr Tom Van Doorselaere explains; "We interpret the data differently. They think they're looking at an Alfvén wave, but in fact they are looking at Kink wave.

"Kink waves are a bending of the magnetic field, much alike the bending of the string, when playing the guitar.

"Moreover, because the scientists from Boulder Colorado identified the wrong kind of wave all of their subsequent calculations are out. And, sadly, it means the question of why the Corona is hot remains unanswered."

Source: University of Warwick

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