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The magnetic Rayleigh-Taylor instability in solar prominences

A. Hillier

Prominences are cool, dense clouds of plasma that form in the solar corona that display a wide range of dynamics of a multitude of spatial and temporal scales. In recent years two different phenomena that have been discovered to occur in prominences can be understood as resulting from the Rayleigh-Taylor instability (a fundamental instability of many astrophysical systems). The first is that of plumes that rise through quiescent prominences from low density bubbles that form below them. The second is that of a prominence eruption that fragments as the material falls back to the solar surface. In this talk I will talk about the work performed to identify these events as the magnetic Rayleigh-Taylor instability, from both the numerical and analytical viewpoint. And how this work has been used to make estimates of the magnetic field strength of prominences (something notoriously difficult to measure). Due to their high quality, these observations are of particular importance for developing our understanding of the role of the Rayleigh Taylor instability in the magnetised systems that exist in astrophysics and plasma physics, and I will discuss this connection.