M16c **Analytic investigation of the magnetic Rayleigh-Taylor instability in a stratified atmosphere**

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The wavelength scaling from the magnetic Rayleigh-Taylor instability has been used to estimate the magnetic field strength of astrophysical systems, i.e. in prominence eruptions (eruptions of dense plasma clouds in the solar atmosphere) and supernova remnants. In general, the equation used to determine the magnetic field is only suitable for the instability in two constant density layers. However, most of the situations in which we are interested the effects of gravitational stratification are very important, and hence likely to change the behaviour of the instability at wavelengths larger than a pressure scale height. We present an analytic investigation of the growth rate of the Rayleigh-Taylor instability, finding that for wavelengths greater than the pressure scale height, the growthrate γ of the instability is greatly reduced, with the scaling changing from $\gamma^2 \propto k$ to $\gamma \propto k$. We will apply the results from this investigation to estimate the magnetic field strength in the prominence eruption on 2011 June 7, determining how the stratification effects the estimated strength of the magnetic field.