

# MHD MODE CONVERSION IN A STRATIFIED ATMOSPHERE

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Mode conversion in the region where the sound and Alfvén speeds are equal is a complex process, which has been studied both analytically and numerically and has been seen in observations. In order to further the understanding of this process we set up a simple, one-dimensional model, and examine wave propagation through this system using a combination of analytical and numerical techniques. Simulations are carried out in a gravitationally stratified atmosphere with a uniform, vertical magnetic field for both isothermal and non-isothermal cases. For the non-isothermal case a temperature profile is chosen to mimic the steep temperature gradient encountered at the transition region. In all simulations, a slow wave is driven on the upper boundary, thus propagating down from low- $\beta$  to high- $\beta$  plasma across the mode-conversion region. In addition, a detailed analytical study is carried out where we predict the amplitude and phase of the transmitted and converted components of the incident wave as it passes through the mode-conversion region. A comparison of these analytical predictions with the numerical results shows good agreement, giving us confidence in both techniques. This knowledge may be used to help determine wave types observed and give insight into which modes may be involved in coronal heating.