

## A layer of fluid with variable conductivity

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The electrical conductivity of Jupiter's interior varies over several orders of magnitude, from the non conducting outer reaches of the planet to the highly conducting metallic hydrogen region (at approximately 0.8 RJ). In an attempt to pin down the effect that this variance could have on the dynamics of such a system, I present a plane layer approximation of a rapidly rotating, inviscid fluid with imposed zonal surface winds and varying conductivity. Limitations of a magnetically diffusing (low Rm) assumption will be discussed along with initial thoughts for a higher Rm approximation.