

Examining Radial-Interchange in Outer Planet Magnetospheres using JERICHO: a Kinetic-Ion, Fluid-Electron Hybrid Model

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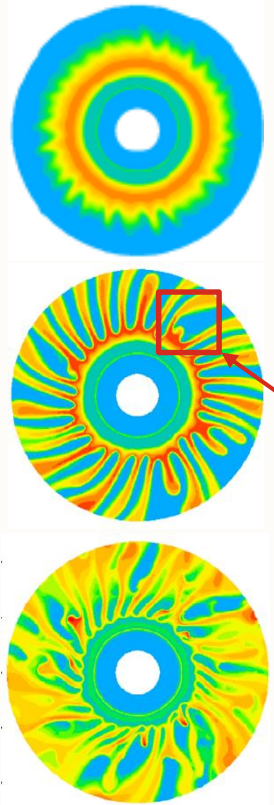


[JAWiggs](https://twitter.com/JAWiggs)



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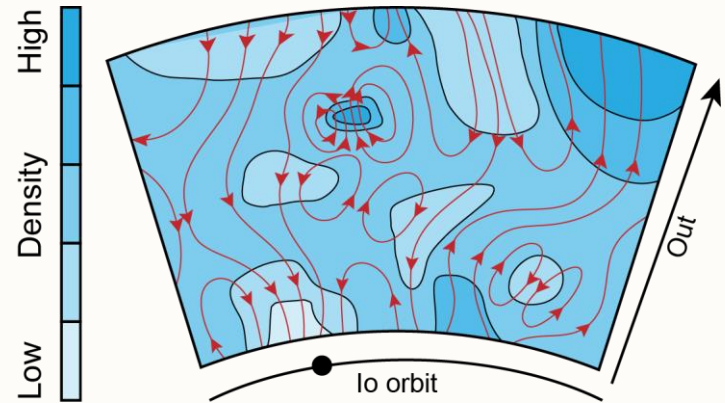
Radial Interchange at the Outer Planets



- Have plasma sources in inner magnetospheres of Jupiter and Saturn
- Plasma is transported into middle and outer magnetosphere by RI instability

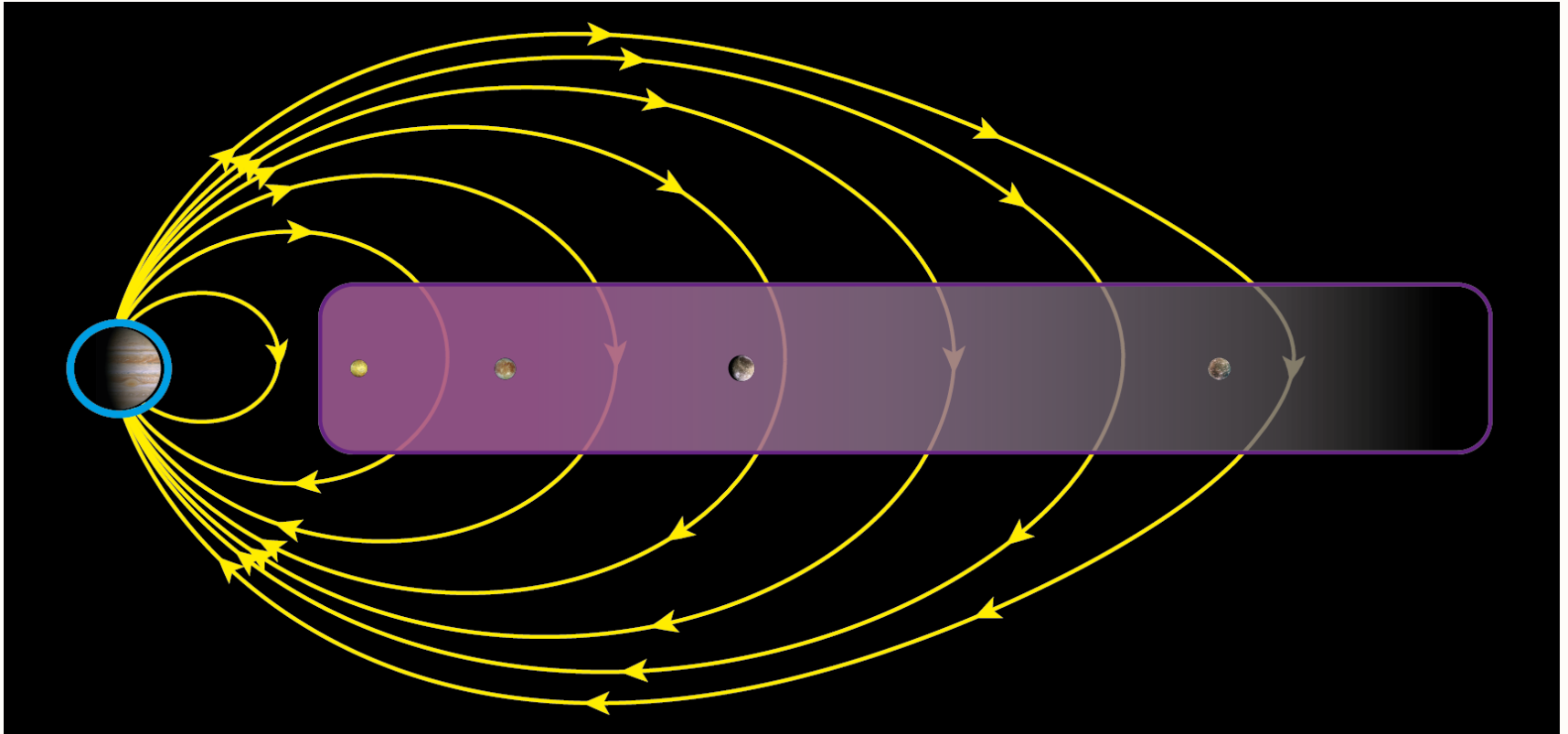
What's happening inside here? Region is too small to probe with current state-of-the-art

Liu et al, 2010

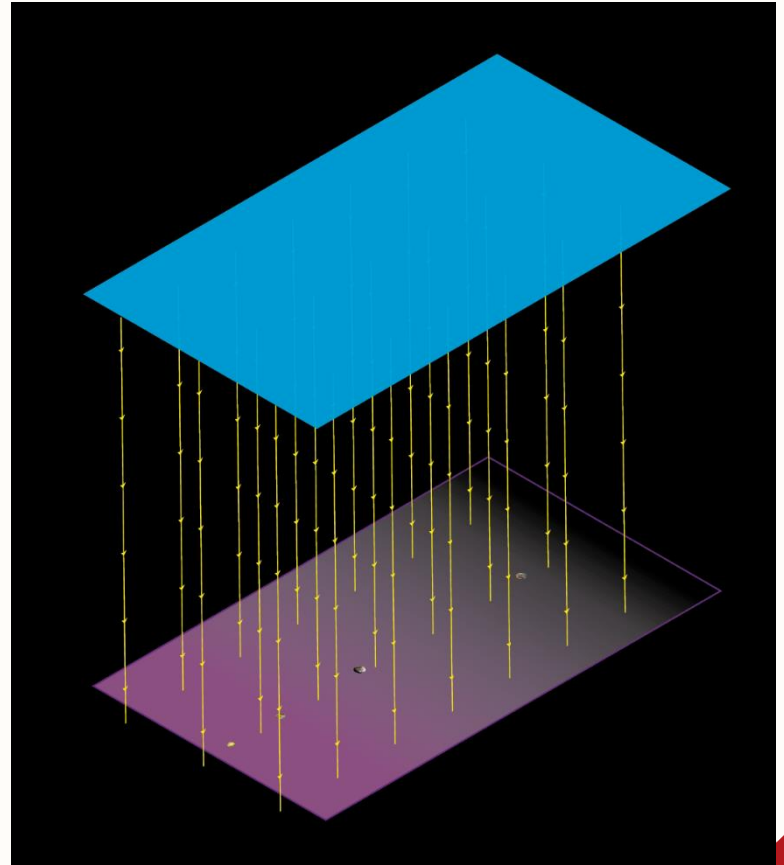
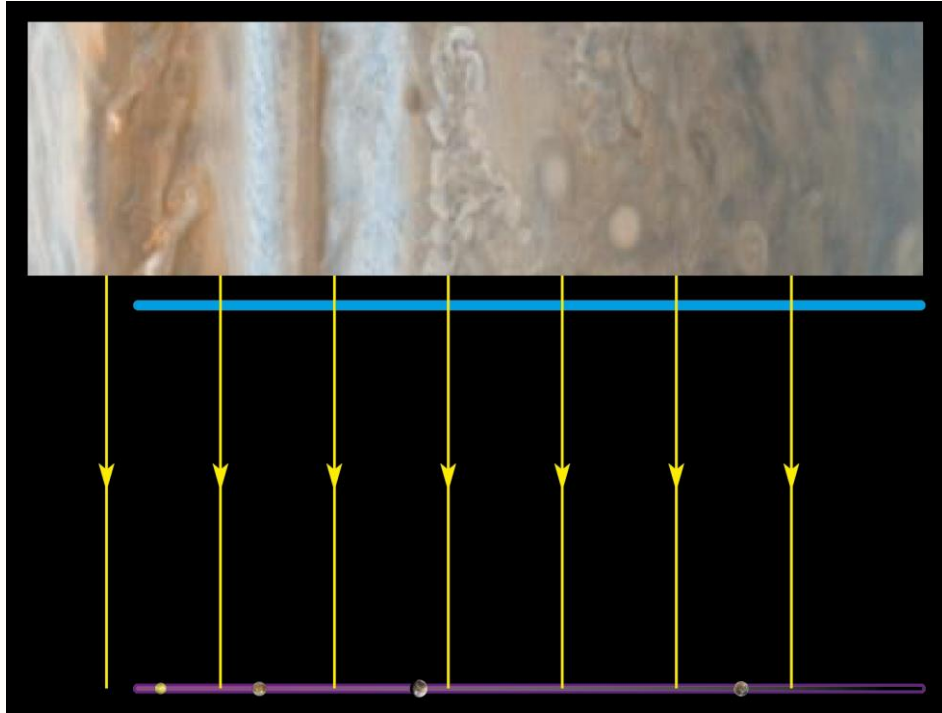


After: Southwood & Kivelson, 1989

JERICO – Model Topology

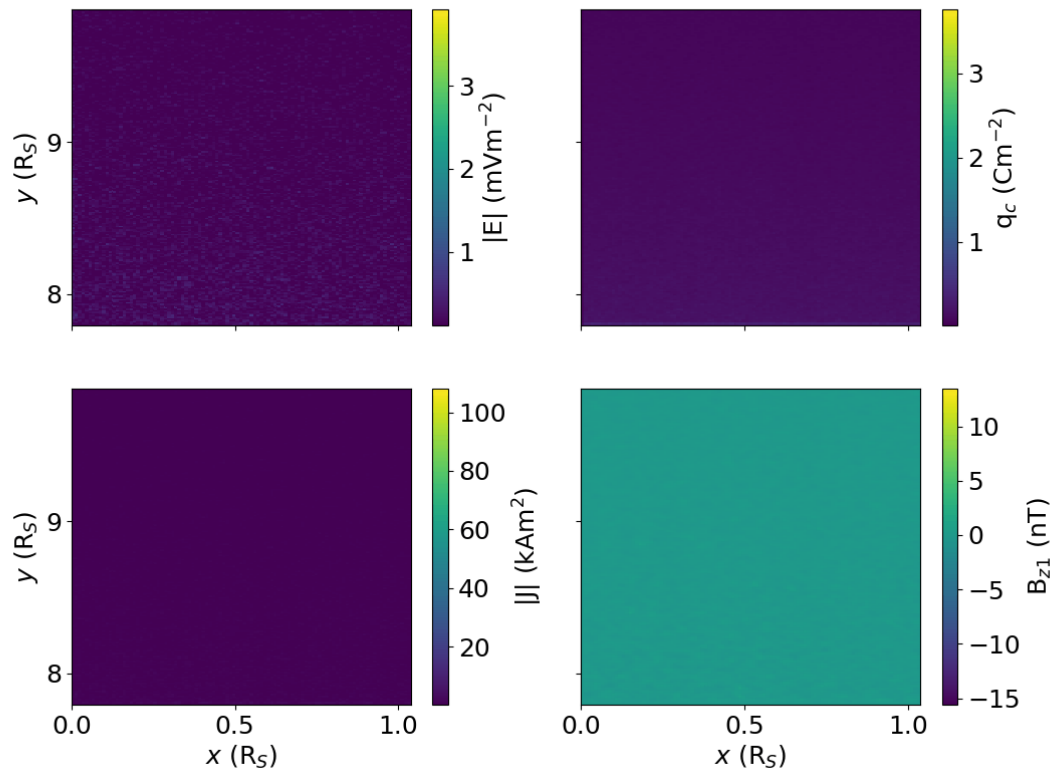


JERICO – Model Topology

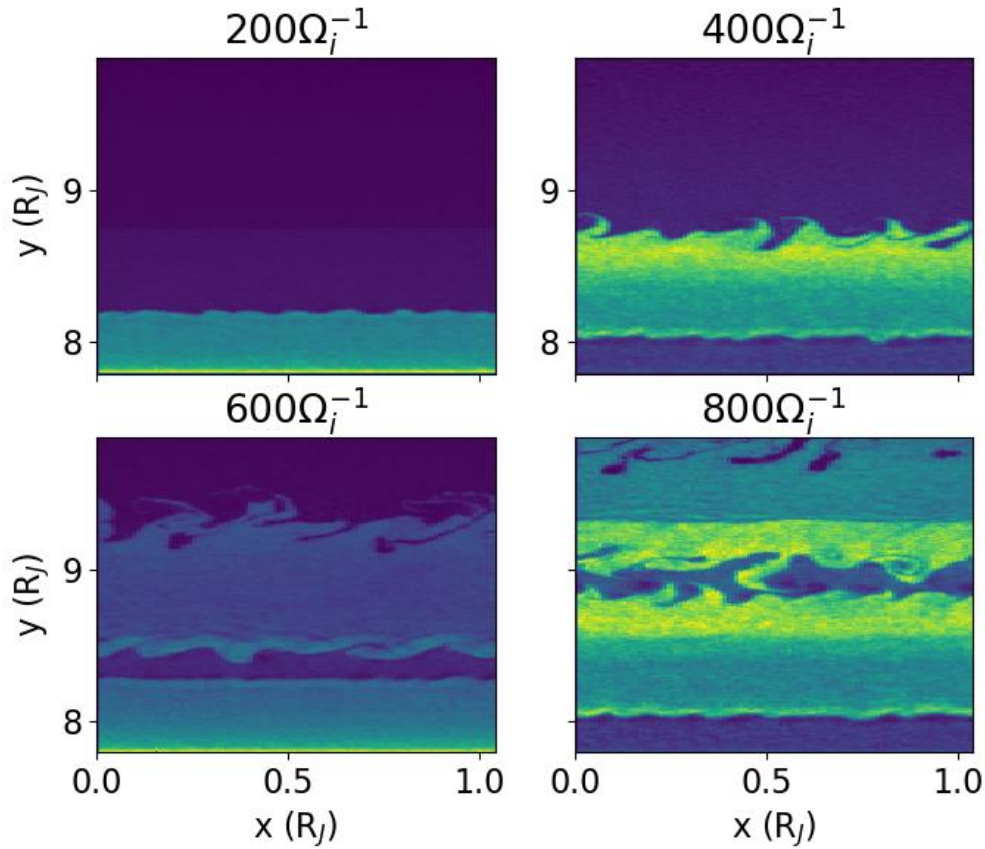


Radial-Interchange Instability – Model Run

$t = 1.0\Omega_i$



Radial-Interchange Instability – Initial Analysis



- See $\sim 10^1$ instabilities form on front of plasma injection
- No gravity included in model and no velocity shear along interface of injection
- See narrow channels of tenuous plasma being form between dense fingers



Summary

$$t = 1.0\Omega_i$$

