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Magnetic Braking of Jovian Jet Flows ASHNA AGGARWAL, UCLA,
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azimuthally-directed jet flows of the gas giants, Jupiter and Saturn, are amongst
their most dominant surface features. Recent Juno gravity measurements have in-
ferred that the zonal jets of Jupiter extend from the weather layer, where they are
directly observed, down at least 3,000 km deep into the H-He molecular atmosphere.
In addition, Jupiter's electrical conductivity increases as the molecular envelope
transitions to a liquid metal. As electrical conductivity increases, the strength of
magnetic forces grows, acting as a resistive brake on the jet flows. We have de-
veloped a pseudo-spectral code that solves the Cartesian Navier-Stokes equations
in 2-D with buoyancy and a quasi-static magnetic field to quantify the process of
magnetic braking, thought to truncate the Jovian jets. We will present the results
of a suite of direct numerical simulations (DNS) of shearing convection, similar to
Goluskin et al., (J. Fluid Mech. 759, 360, 2014), where we vary the strength of an
imposed transverse magnetic field. Depending on the value of the magnetic field,
the jets are damped, strongly intermittent, or fully suppressed.

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