

Atmospheric Dynamics and General Circulation of Extrasolar Planets

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The nonlinear dynamics of neutral and ionized exoplanetary atmospheres are studied. Fundamental equations in the collision-dominated regime are discussed and high-resolution numerical simulations are presented in idealized settings. The focus is on elucidating mechanisms that control the structure and interactions of jets, vortices, waves, currents, and magnetic fields — specifically their role in producing variability and other observable features for EChO.