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Testing the Limits of Exoplanet Spectroscopy

Planetary atmospheres are inherently three-dimensional (3D) structures that feature gradients in temperatures and chemical abundances, as well as hot spots, cold spots, and storms. An understanding of atmospheric composition impacts theories of planetary formation, so the accurate determination of abundances is crucial in addressing the origins of the solar system and planets in general. The first step in doing so is preparing robust atmospheric models. We have created a flexible new code to create thermal emission phase curves from arbitrary 3D model atmospheres. We generate spectra using the radiative transfer code DISORT. Our model planets can have any orbital eccentricity, and orbital inclination, adding great freedom to the viewing geometry that will better portray observed orbital configurations. I present our preliminary results.