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Spitzer's Exoplanet Legacy: Population Trends from Phase Curve Observations

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While the Spitzer telescope has officially reached the end of its mission, it remains a powerful force in exoplanet characterization. Spitzer 3.6 and 4.5 micron phase curve observations allow us to measure key parameters that result from a planet's unique atmospheric circulation such as heat redistribution efficiency and hot spot shifts due to equatorial jets. Now in the era of comparative exoplanet studies, an understanding of the observed trends in these parameters is key to our understanding of the Hot Jupiter population. However, to ensure any observed trends are accurate, we must be sure that our techniques to extract these signals from the instrumental noise are reliable and reproducible. Towards those means, we have developed a more robust intrapixel sensitivity detrending method to remove the main systematic in Spitzer IRAC observations. We are using our new fixed intrapixel sensitivity map to perform as uniform of an analysis as allowed by the phase curve data. I will discuss trends in observed Hot Jupiter atmospheric parameters, as well as how these observed trends compare to three dimensional circulation model predictions to determine what they teach us about the Hot Jupiter population. Future work will extend this uniform analysis to the entire population of Spitzer phase curves and improve our modeling techniques to better compare between models and data.