Exploring strange new worlds with high-dispersion spectroscopy

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Propositions accompanying the dissertation

Exploring Strange New Worlds

with High-Dispersion Spectroscopy

1. It is unclear whether TiO is present in the dayside spectrum of the ultra-hot Jupiter WASP-33b. (Chapter 2)
2. Future observational facilities will be readily capable of performing Ti isotope studies of the atmospheres of young, widely-orbiting super Jupiters. (Chapter 3)
3. Whether the young system HD 169142 contains (proto)planets remains undetermined. (Chapter 4)
4. Even using 40-meter-class telescopes, high-dispersion detections of O_2 in the atmospheres of temperate Earth-twins orbiting M-dwarfs will require substantial observational resources. (Chapter 5)
5. The best-laid research plans may not survive contact with data.
6. Reanalysis with multiple techniques and data sets is important in verifying high-dispersion detections.
7. The demonstrated ability of high-dispersion analyses to provide constrained absolute abundances increases their relevance for atmospheric studies of exoplanets.
8. Investing time to understand instrument and data characteristics at the beginning of a project can save substantial time in subsequent stages.
9. Kindness is inexpensive to give, but is invaluable to receive.
10. There is no such thing as a second bad glass of wine.

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