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Isotopes and the characterization of extrasolar planets

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Propositions accompanying the dissertation

Isotopes and the characterization of extrasolar planets

1. Atmospheric isotope abundance ratios suggest great potential for tracing the formation history of exoplanets. (Chapter 2)
2. The contrast of isotopic composition between gas giant planets and brown dwarfs allows for unraveling the boundary between planets and brown dwarfs. (Chapter 3)
3. Probing different atoms and molecules helps disentangle different regimes in highly-irradiated exoplanet atmospheres. (Chapter 4 & 5)
4. Interactions between circumstellar disks and stellar companions play an important role in the outcomes of planet formation. (Chapter 6)
5. Combining novel and multiple observational probes will be essential to bridge the gap between atmospheric characterization and planet formation.
6. Population-level homogeneous analysis beyond individual targets will be the key future step for high-resolution spectral characterization of exoplanet atmospheres.
7. Despite its seemingly straightforward nature, fitting the transmission spectra of Earth's atmosphere remains a challenging task.
8. Appreciating the nuances of data reduction is crucial for producing reliable scientific results.
9. The value of a new discovery persists, even if it is ultimately proven incorrect in the future, which is often inevitable.
10. We should be wary of the tendency to interpret data based on our preconceived expectations.

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