Spectroscopic characterization of exoplanets : from LOUPE to SINFONI

Hoeijmakers, H.J.

Propositions accompanying the thesis

Spectroscopic characterization of exoplanets: From LOUPE to SINFONI

1. Accurate laboratory measurements and theoretical calculations of the electronic transitions of molecules are crucial to detect these species in high-dispersion observations of exoplanets.

   (Chapter 2)

2. To reliably identify polarimetric biomarkers in the polarization spectra of Earth-like exoplanets, these must first be measured through spectropolarimetric observations of Earth.

   (Chapter 3)

3. Intrinsic thermal emission from an exoplanet can be disentangled from reflected starlight using high-resolution spectroscopy at optical wavelengths.

   (Chapter 4)

4. Molecule mapping can be used to detect molecules in the atmospheres of directly imaged hot young gas giants and constrain the effective temperature and surface gravity.

   (Chapter 5)

5. Future integral-field spectrographs on ELT class telescopes will be perfectly suited to characterize hot young gas giants.

   (Chapter 5)

6. For writing a time-critical observing proposal, an astronomer should request the date of the day that precedes the observing night.

7. A rudimentary understanding of instruments and observing techniques is important to successfully conceive of, prepare for, execute and analyze astronomical observations.

8. The ease at which small optical elements can be misplaced, damaged or destroyed should not be underestimated.

9. The development of a space instrument requires decisive project management and a lot of money.

10. Expectation bias hinders scientific progress by preventing unexpected discoveries and promoting searches in directions that are not necessarily fruitful.

11. Specializing in multiple unrelated fields can create unexpected and valuable opportunities.

12. A scientific institute benefits from inclusiveness and cultural diversity.

13. The best way to form a concise opinion about a societal phenomenon is to limit oneself to a superficial investigation of the subject matter.

Herman Jens Hoeijmakers
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