Suppressing a Sea of Starlight : enabling technology for the direct imaging of exoplanets

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Propositions accompanying the thesis

Suppressing a Sea of Starlight

Enabling Technology for the direct imaging of exoplanets

1. The vector Apodizing Phase Plate is achromatic across an octave of wavelength and suppresses both sides of the star simultaneously, thereby overcoming the biggest limitations of the APP. (*Chapter 3*)

2. Direct writing with liquid crystals allows complicated phase designs to be manufactured. (*Chapter 4*)

3. Adding a polarization grating to the phase design makes the vAPP robust and simple. (*Chapter 4*)

4. Astronomical optics based on liquid crystal technology can be implemented in record time at almost any wavelength range. (*Chapters 3, 5 & 6*)

5. Pupil plane coronagraphs outperform focal-plane coronagraphs at small angular separations as long as the tip-tilt problem is not resolved. (*Chapter 6*)

6. The intrinsic properties of the vAPP enable a natural combination with polarimetry and/or spectroscopy. (*Chapter 7*)

7. Commissioning results can make or break an instrument.

8. Extremely large telescopes should offer AO-fed visitor ports and dedicated fraction of observing time to profit from latest insights and developments.

9. Wasting light is a sin.

10. Trying to reinvent the wheel can lead to improved methods and new insights.

11. Peer review should always be performed double-blind.

12. Developing a broad set of skills is important but repairing bikes should be left to the experts.

13. Within 10 years DNA tests will be a staple technique in genealogy.

Gilles Otten, Leiden, October 2016