Characterization of exo-planets via Non Redundant Aperture Masking and advanced starlight suppression techniques.

Sagan Post Doctoral Fellow, 2010
Non Redundant Aperture Masking

NRM: a high angular resolution technique

- Exploration of the close vicinity of nearby stars
- Constraining the structure of planet forming systems

Shivaramakrisnan et.al (2009)

NRM on Gemini Planet Imager:

- Extreme Adaptive Optics provide exquisite wavefront stability.
- Dispersed fringes will allow us spectral characterization and refined subtraction methods.

Kotani et.al (2009)
Advanced Image Reduction techniques

GPI: high contrast imaging instrument
- Extreme Adaptive Optics provide high contrast images
- High dynamic range exploration of the vicinity of nearby stars

Integral Field Spectrograph:
- Spectral characterization of detected companions
- Color diversity enables advanced image subtraction techniques

Hinkley et al. (2010)

P1640 data. Zimmerman et al. (2010)

PSF subtracted Image

P1640 data. L. Pueyo & J. Crepp
Coherent Starlight Suppression

Dual DM wavefront control
Technology demonstration for broadband high contrast for imaging of exo-earths from a space based observatory

Pueyo et.al (2009)

Application to Extremely Large Telescopes

Design of an exo-planet dedicated instrument for the Thirty Meter Telescope


Pueyo et.al (2009)