Advancing Technologies for future Segmented Telescopes

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High contrast imaging with segmented apertures

**What we want.**

Jupiter

Venus

Earth

Juanola-Parramon et al. (2019)

**What we are working on.**

Juanola-Parramon et al. (2019)
First result with fully segmented aperture

Contrast with monolithic aperture $6 \times 10^{-8}$
Contrast with segmented aperture $2 \times 10^{-7}$
(partial calibration, circa December 2020)
Wavefront Maintenance under in the presence of artificial drifts

- Unobstructed monolithic aperture
- 0.01 nm random drift per iteration (4000 iterations)
- $8 \times 10^{-8}$ stable contrast over 6 hours compared to $4 \times 10^{-7}$ open loop measured contrast
- Susan Redmond (PhD student Princeton), SPIE astronomical instrumentation 2020