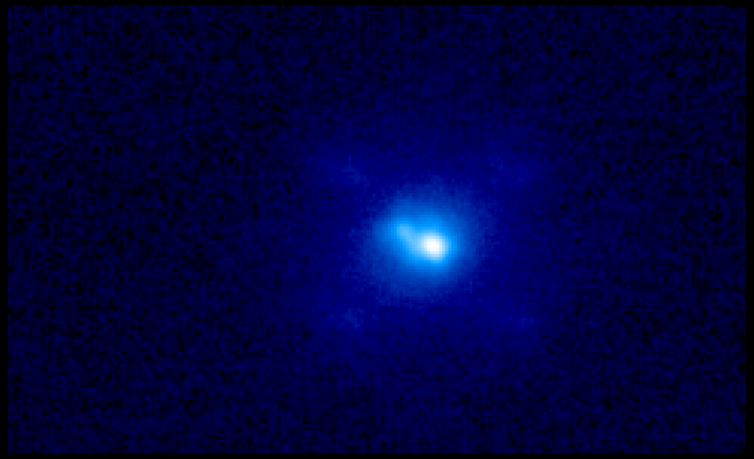
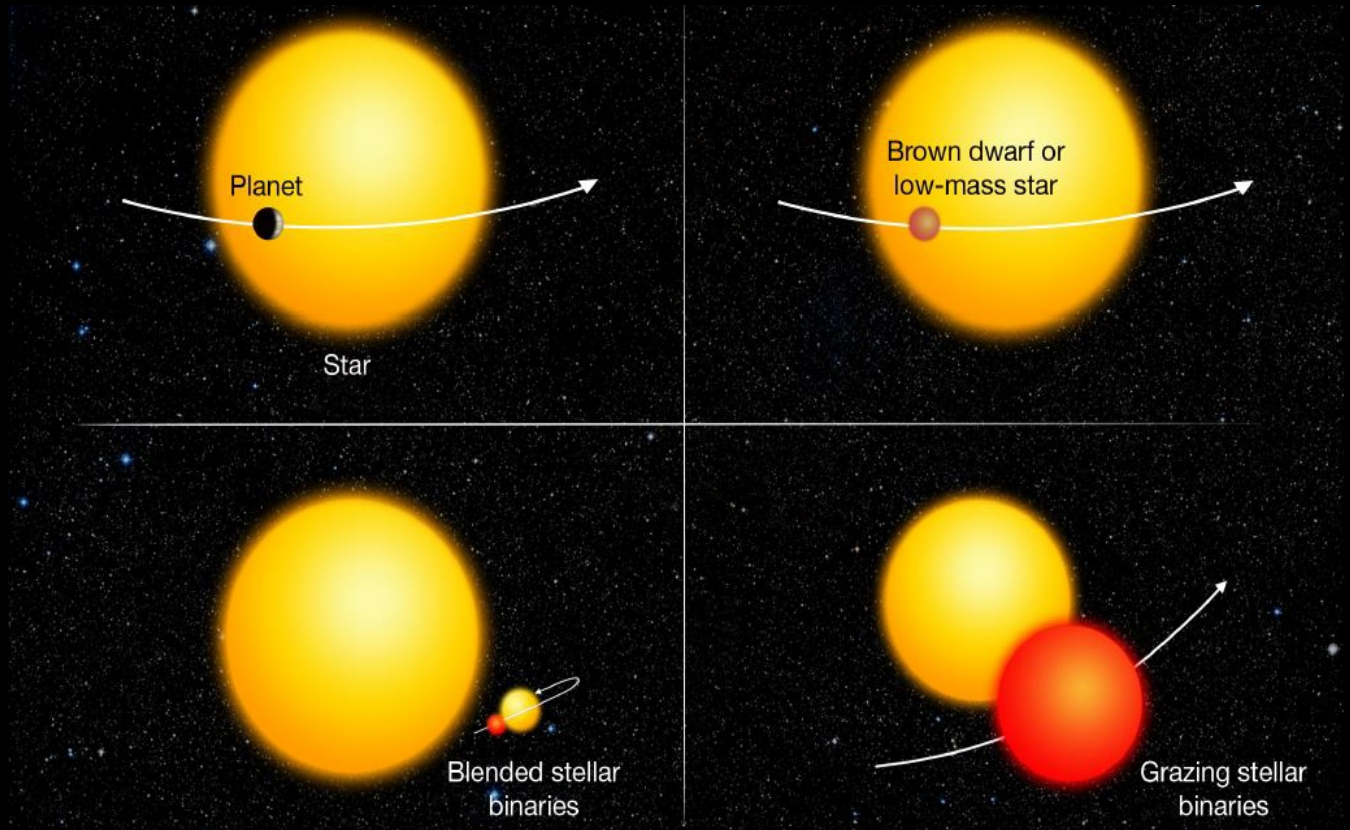
High-Resolution Follow-up of TESS candidate planets with 8m-class telescopes



Elisabeth Matthews, Ian Crossfield, David Ciardi, Steve Howell, Charles Beichman, Erica Gonzalez, Rachel Matson, Joshua Schlieder

Many transit-like signals are not produced by planets



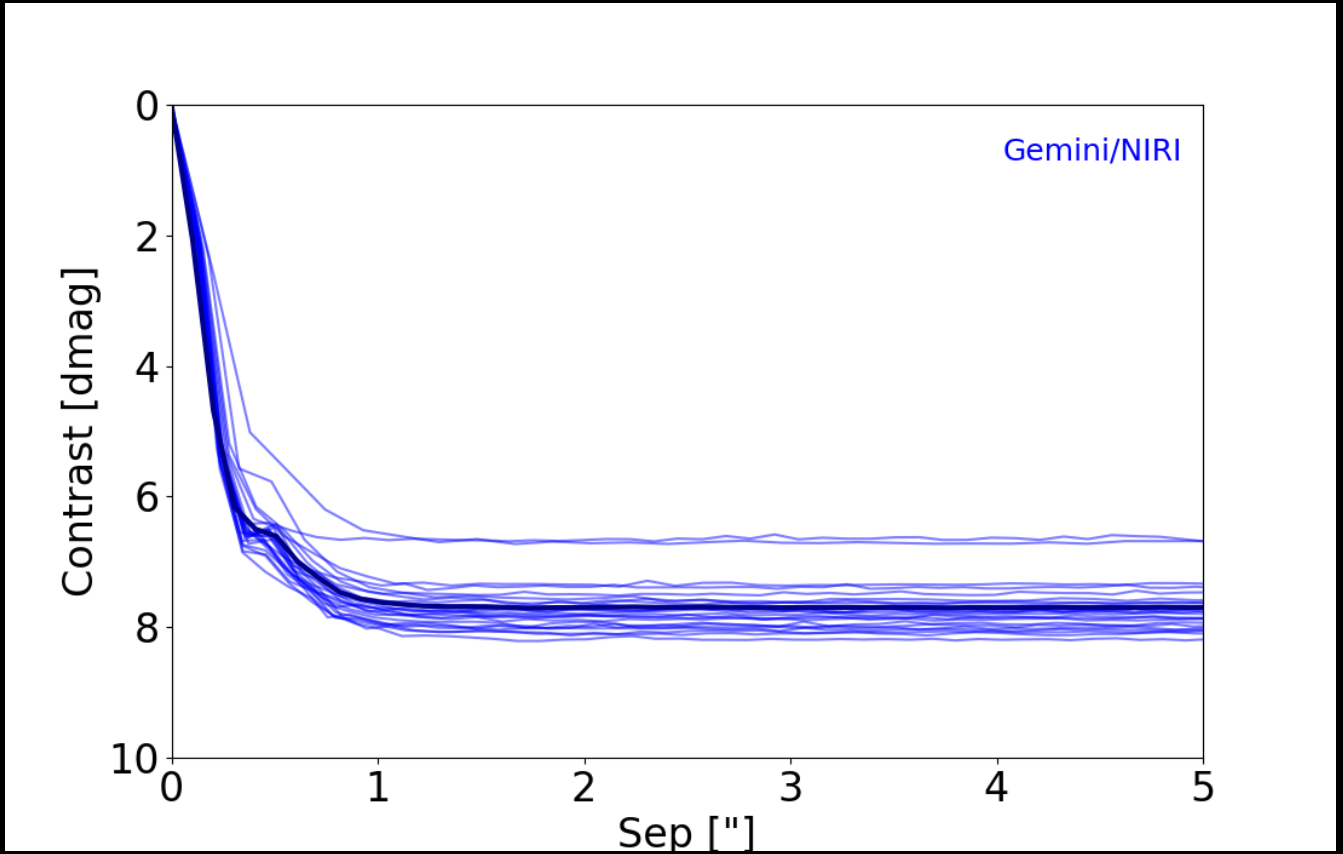
8m telescope time at MIT

- Gemini Large Program (PI Crossfield, 135 hours, 2018b-2020a): NIRI, DSSI, ‘Alopeke
- VLT/NaCo P102 (PI Crossfield, 10 hours)
- VLT/NaCo P103 (PI Matthews, 20 hours)

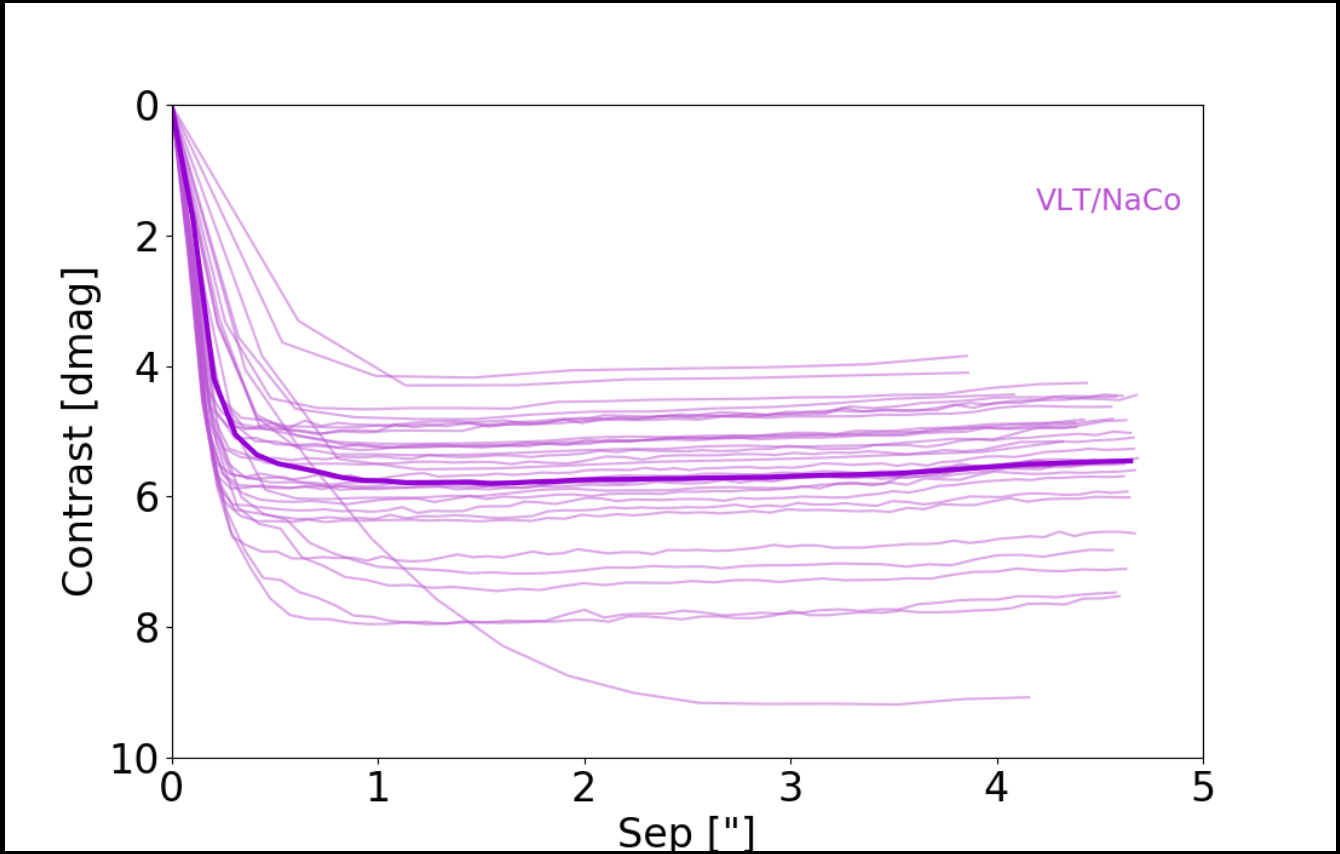
SG3 as a whole

- 986 total observations; 689 unique targets
- See posters 32 (Lund), 21 (Ziegler), 27 (Dressing)

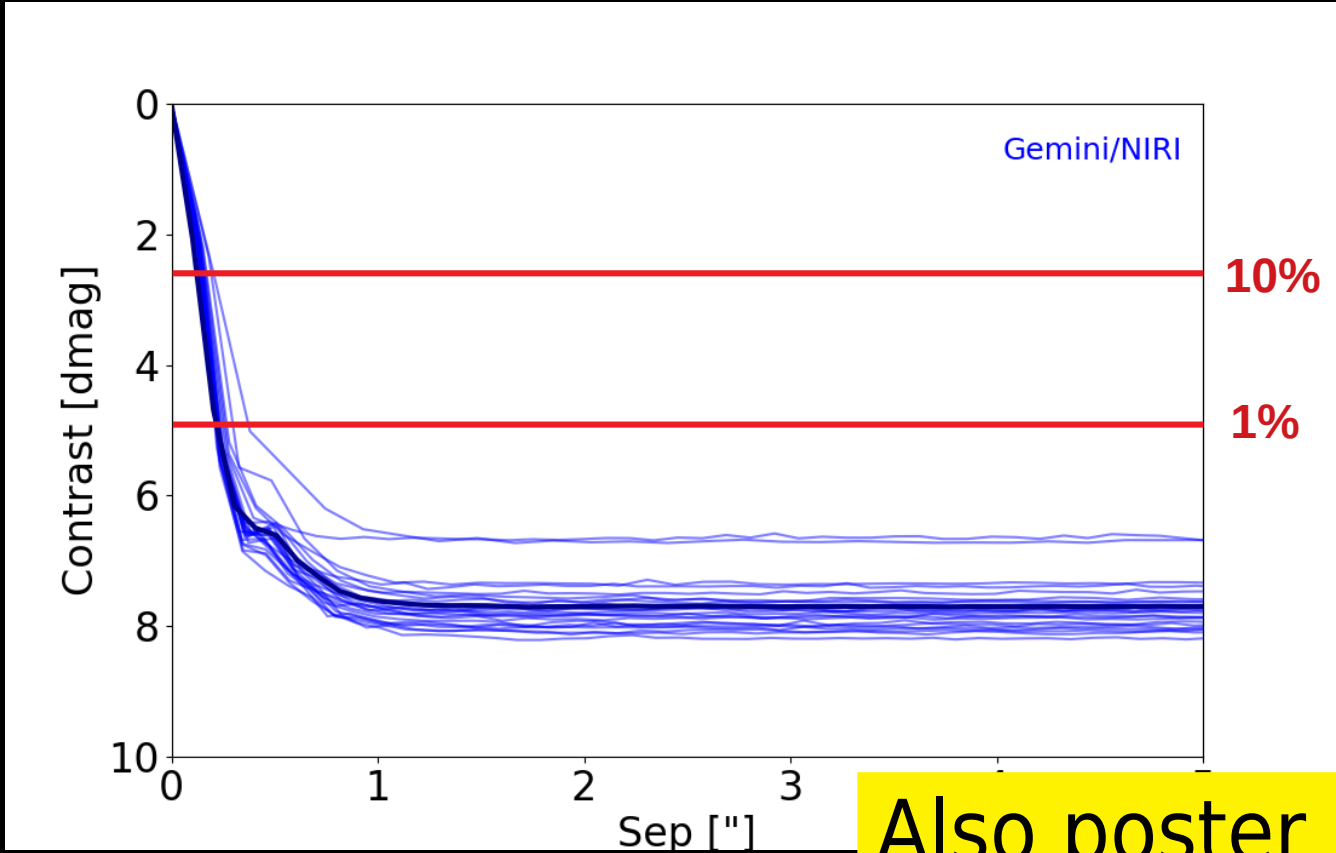
Performance with Gemini/NIRI



Performance with VLT/NaCo

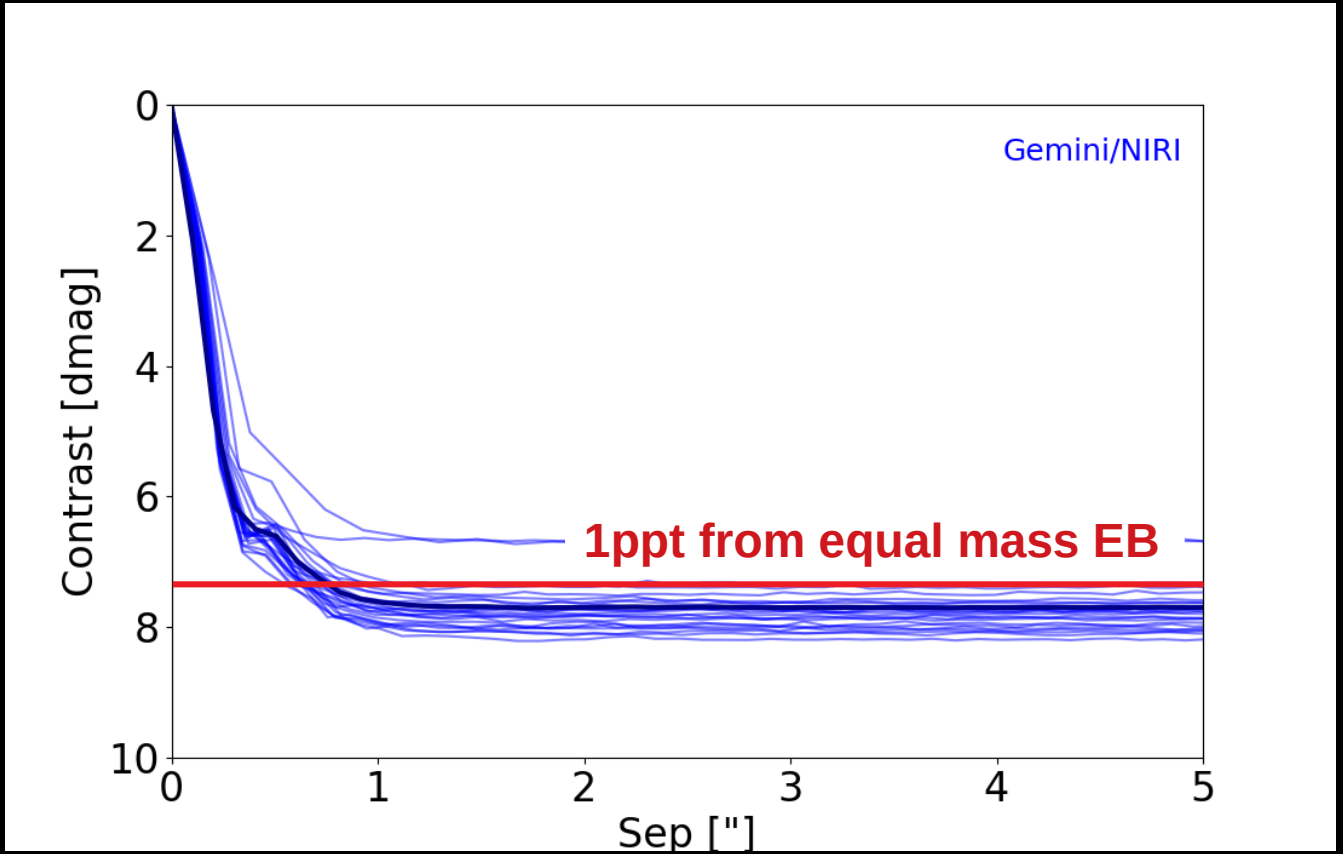


Measured radii are too small

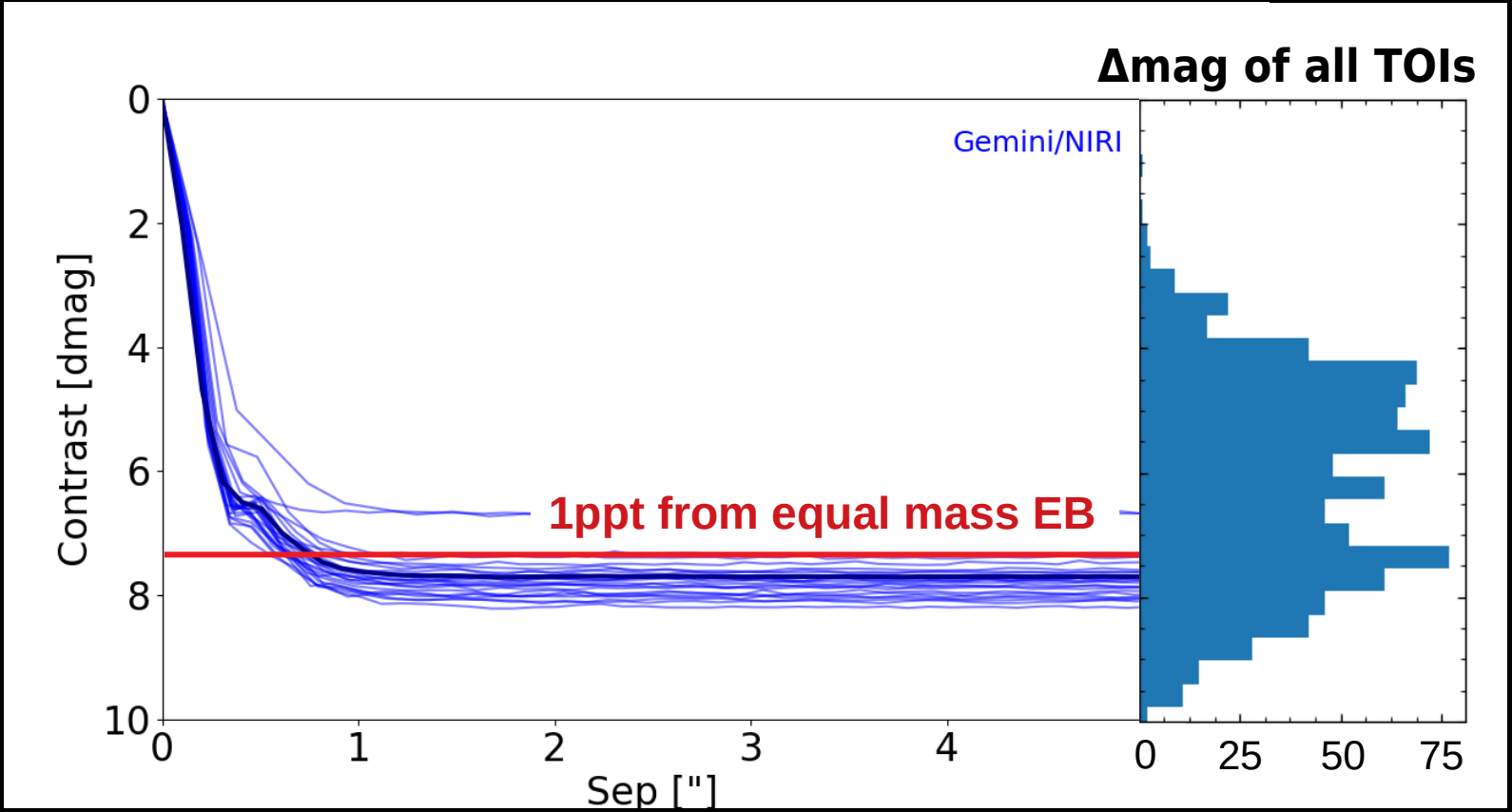


Also poster 32 (Lund)

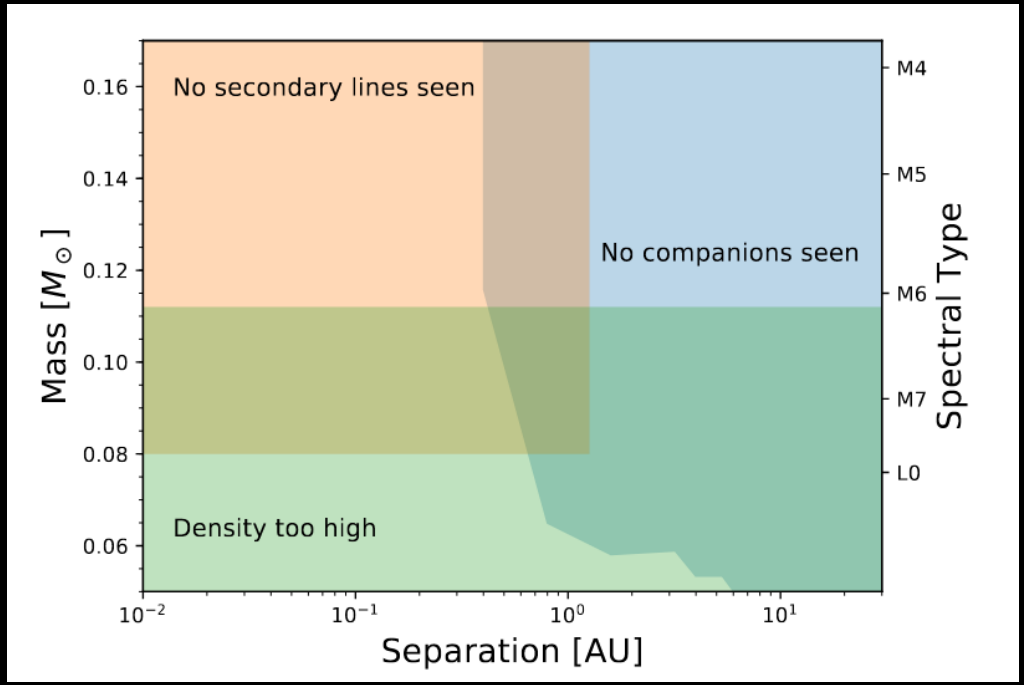
Some “planets” are really EBs



Some “planets” are really EBs

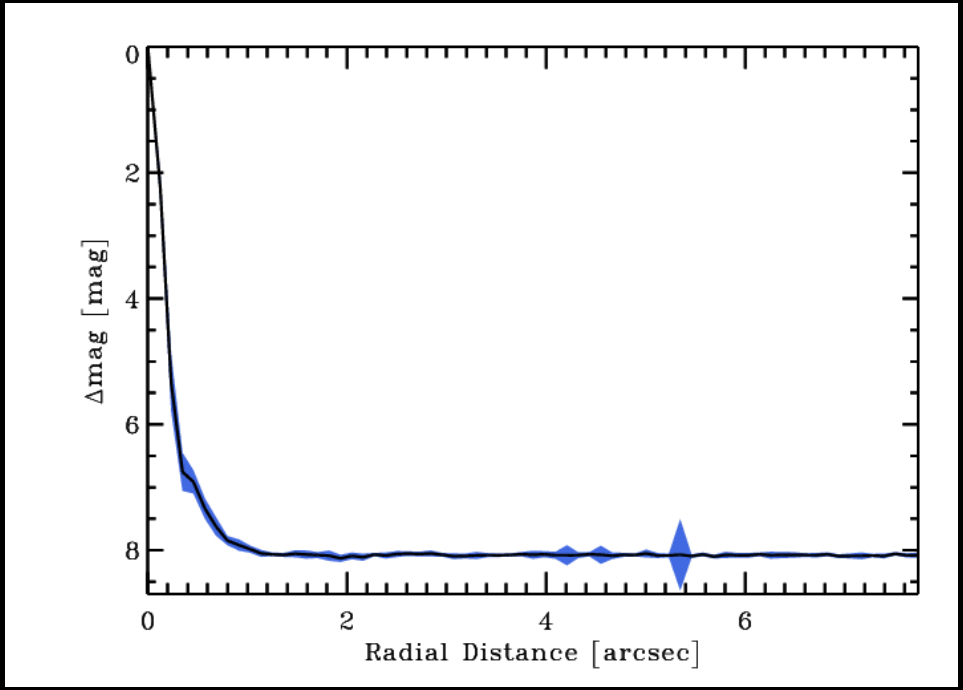


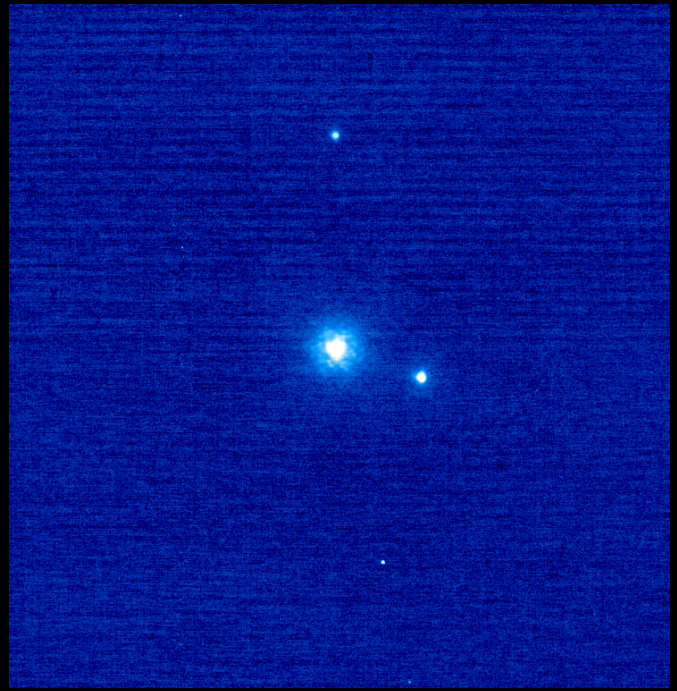
For nearby TOIs, we can rule out stellar companions at all separations



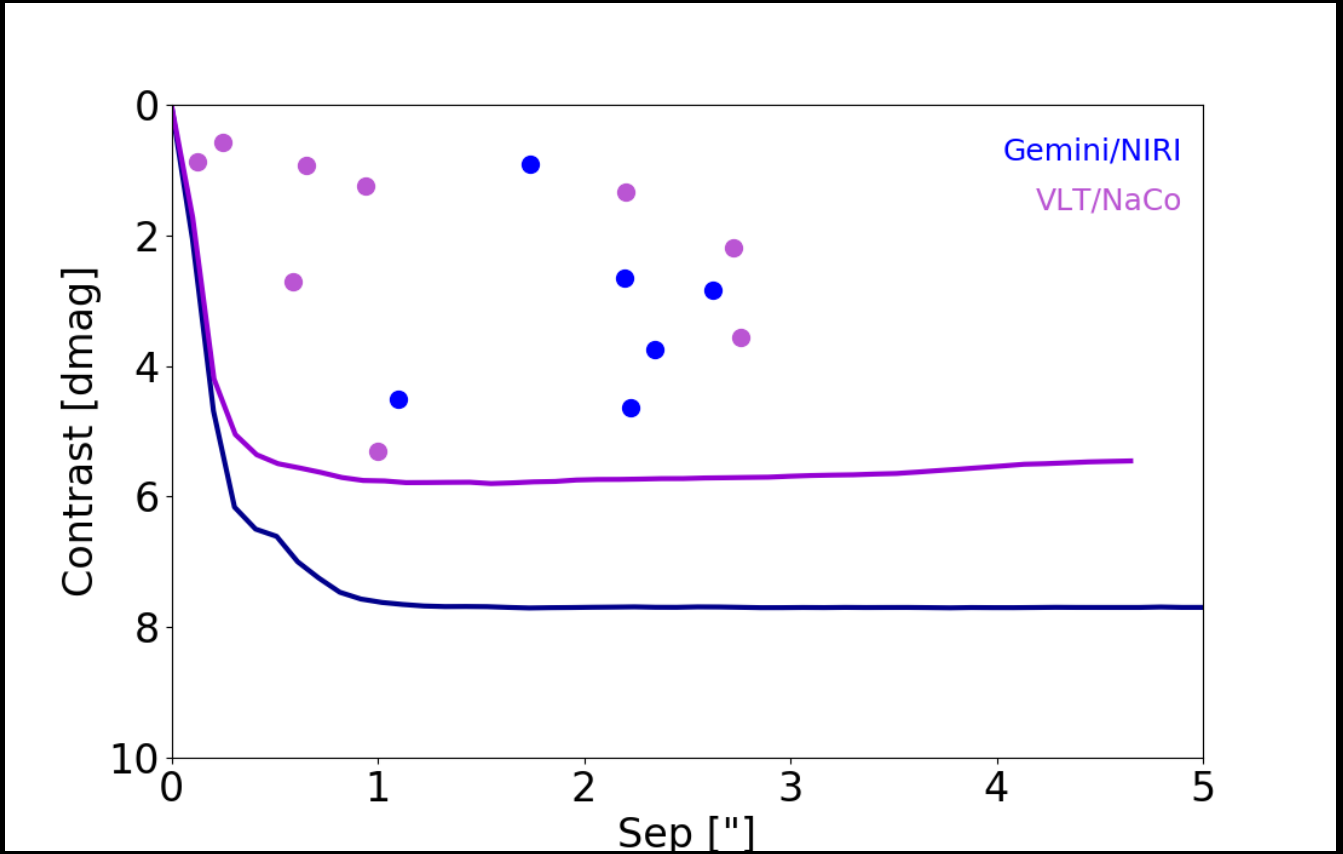
LP791-18, Crossfield et al. 2019

Data Products available on ExoFOP

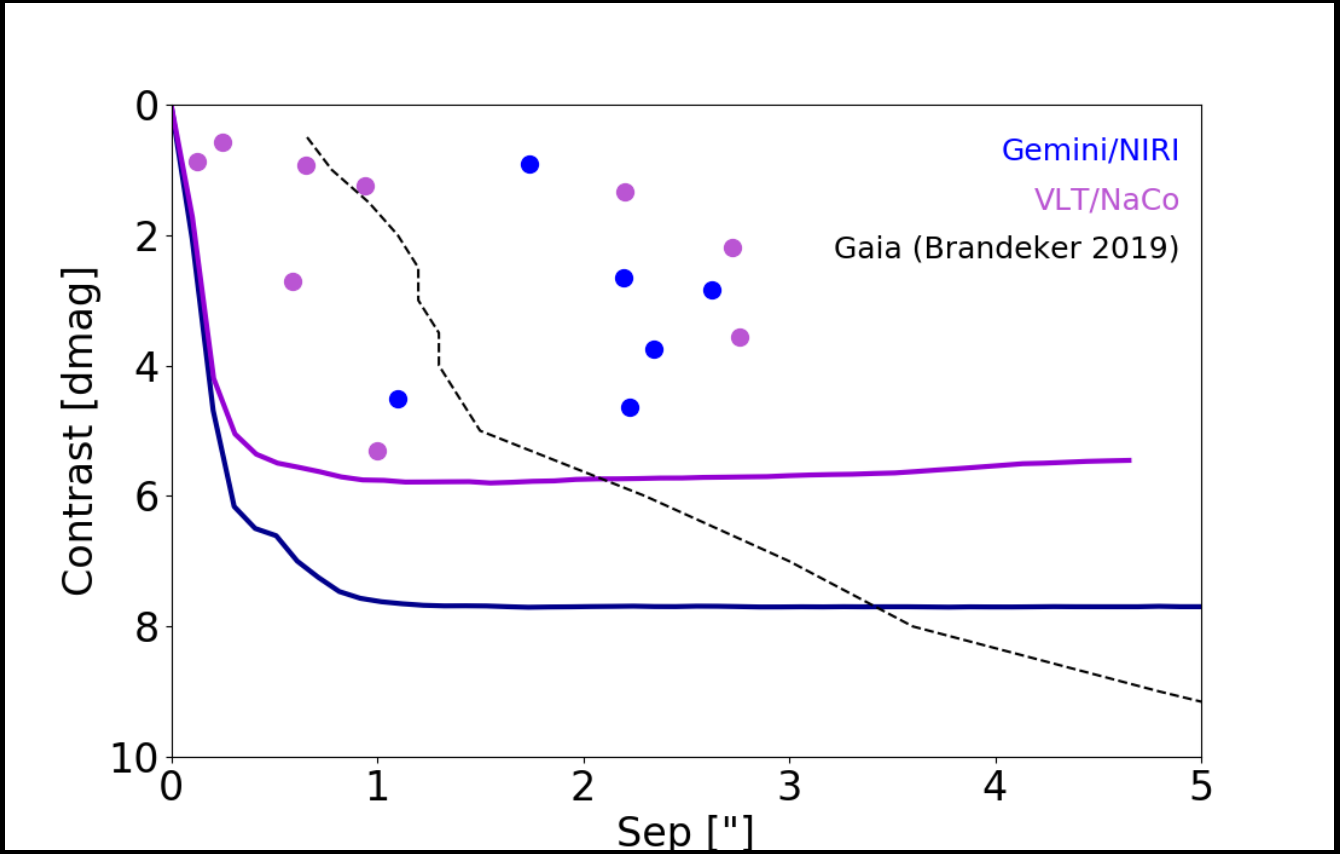




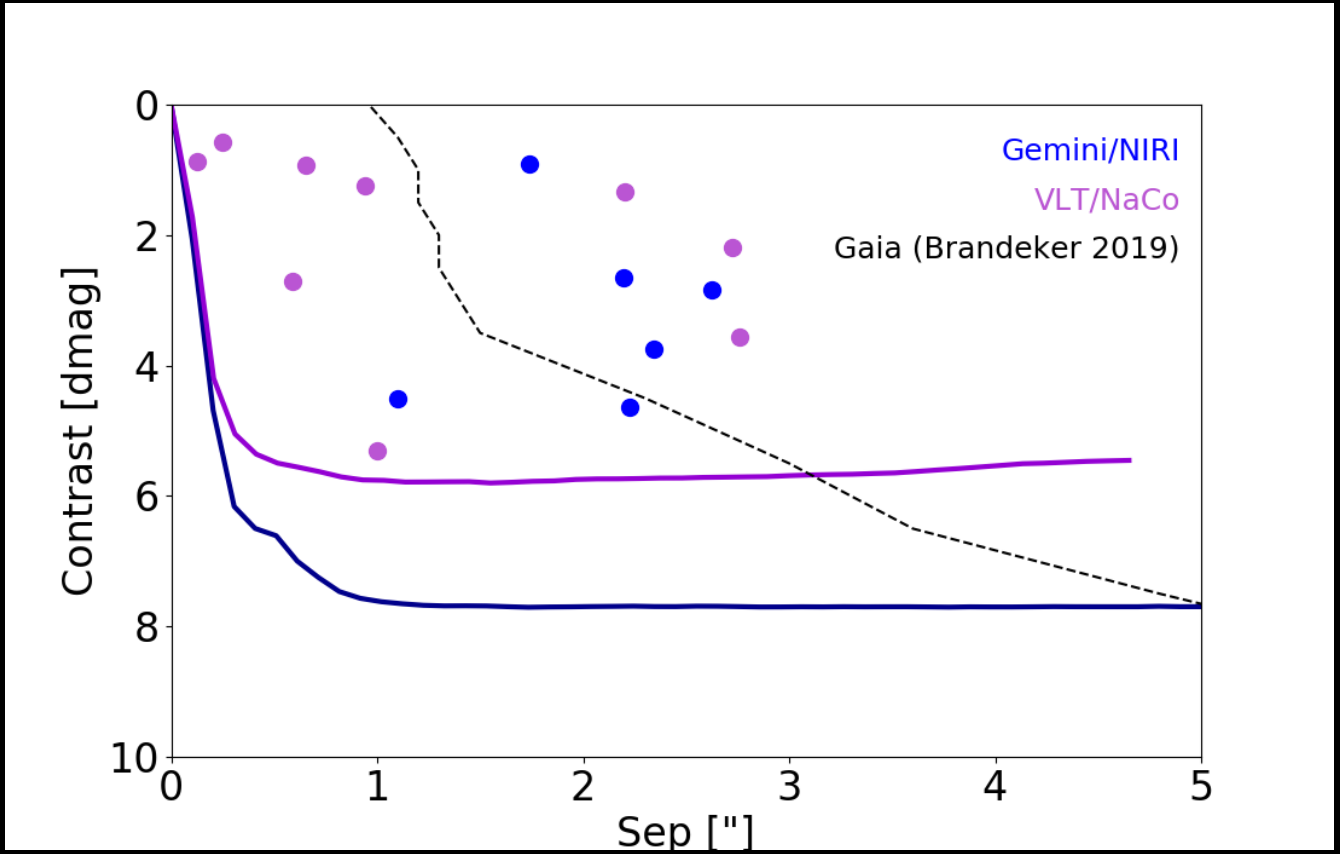
Companion detections so far



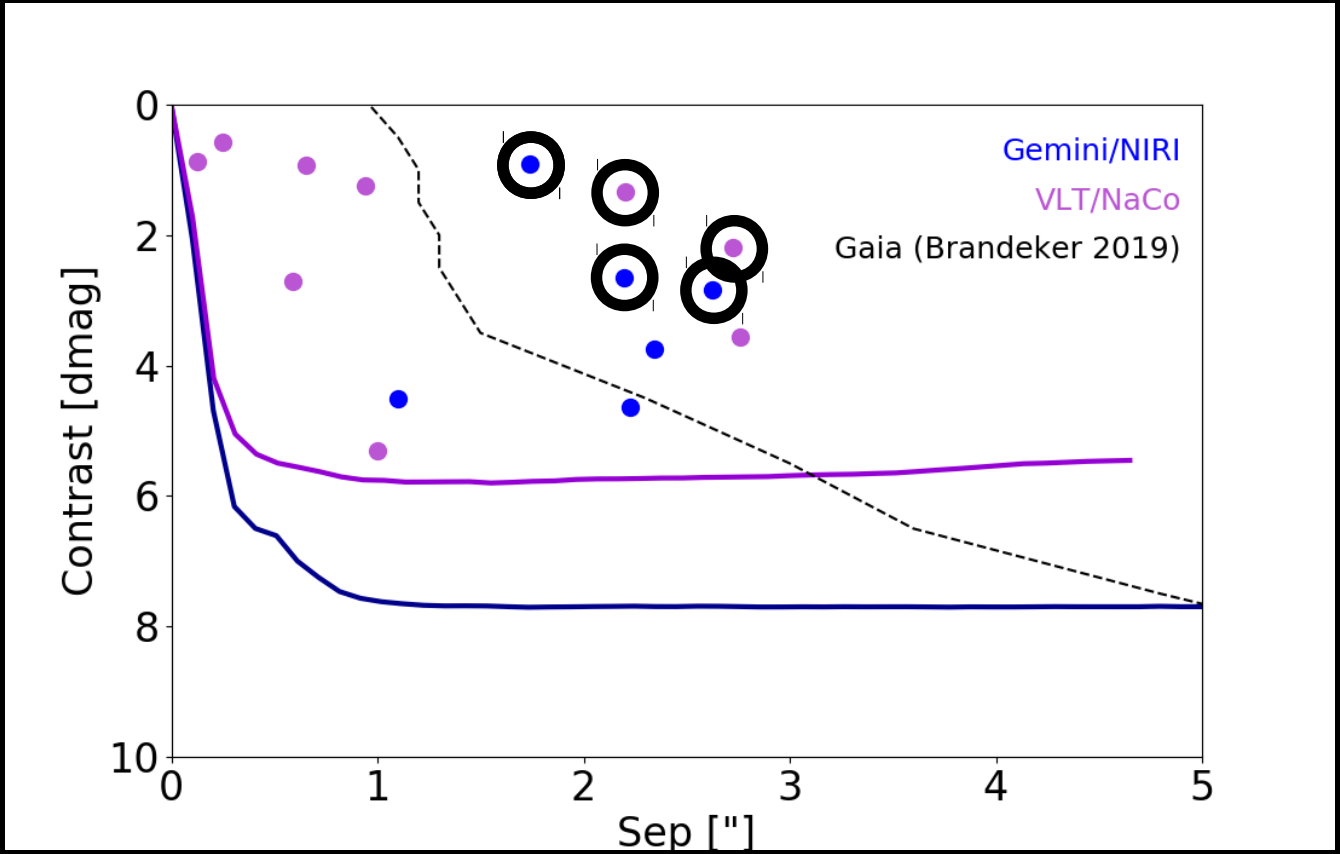
Companion detections so far

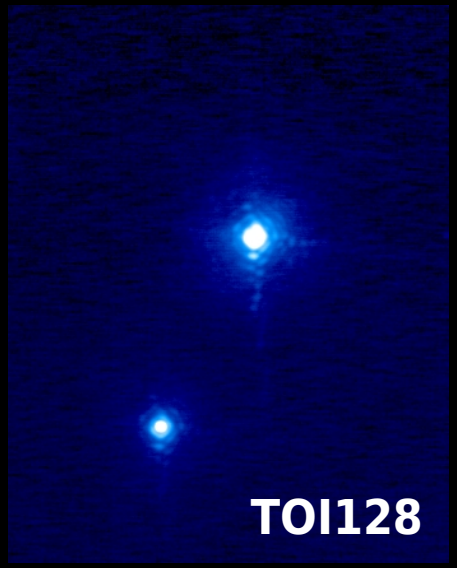


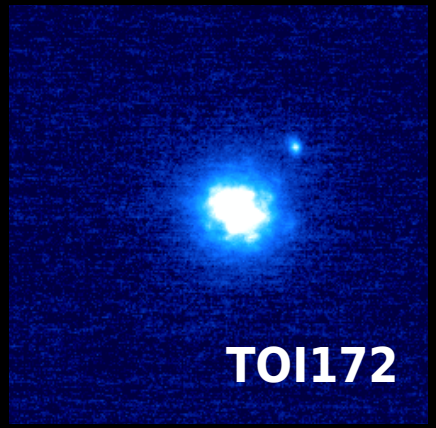
Companion detections so far



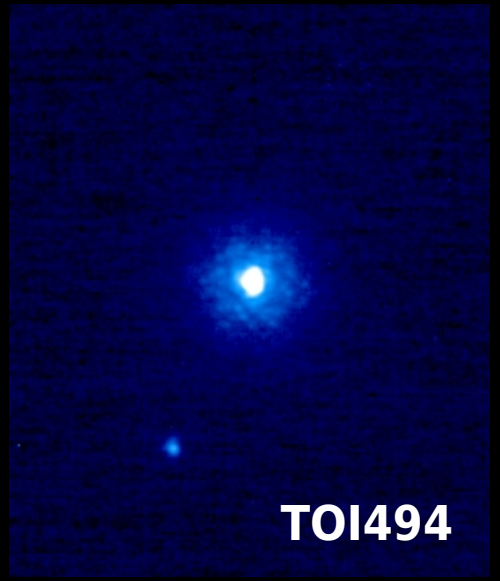
Companion detections so far

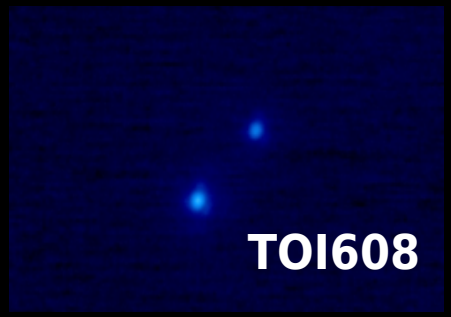


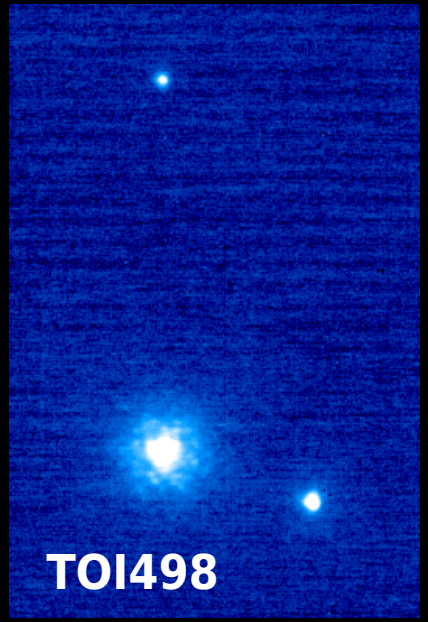

TOI128


TOI172

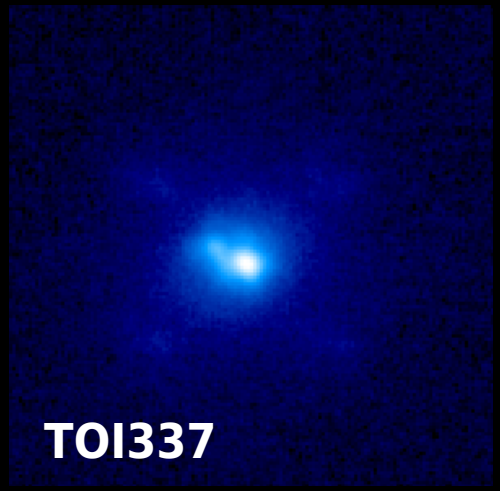
TOI212


TOI494

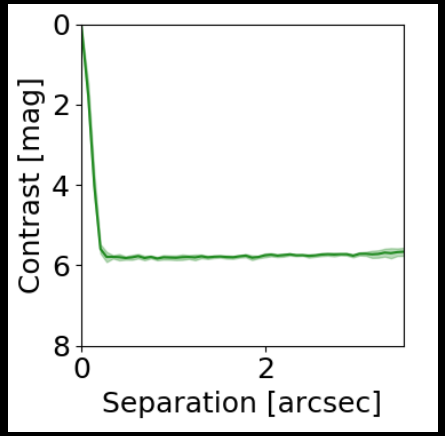

TOI608


TOI498

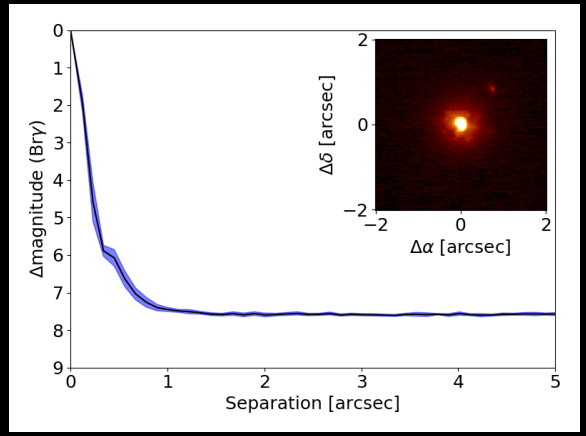
TOI585


TOI337

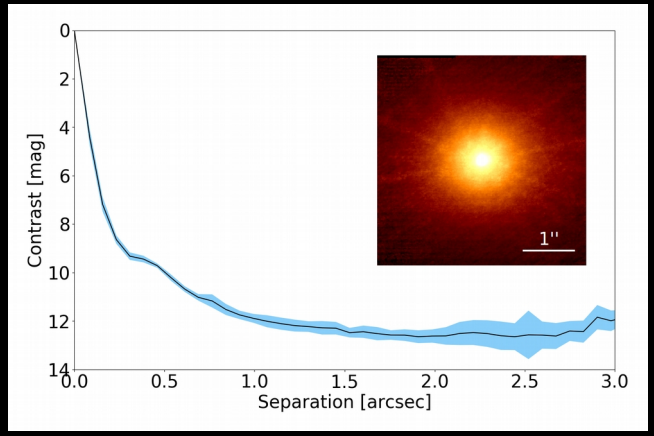
These data are already in several publications



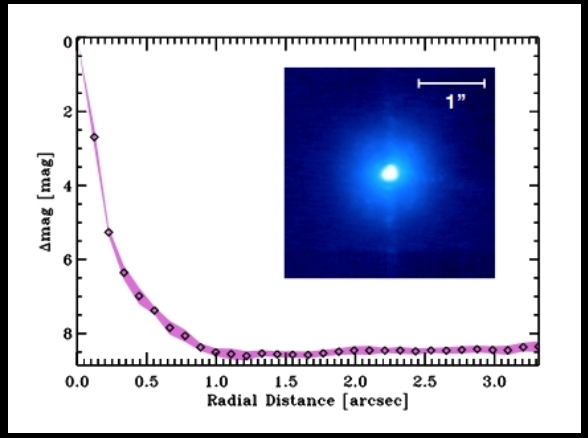
Kostov et al. 2019



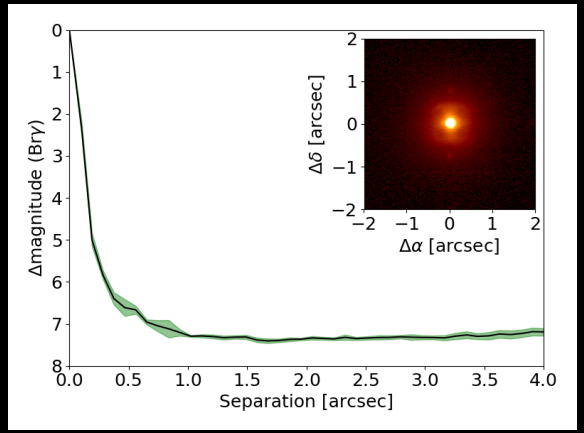
Rodriguez et al. 2019



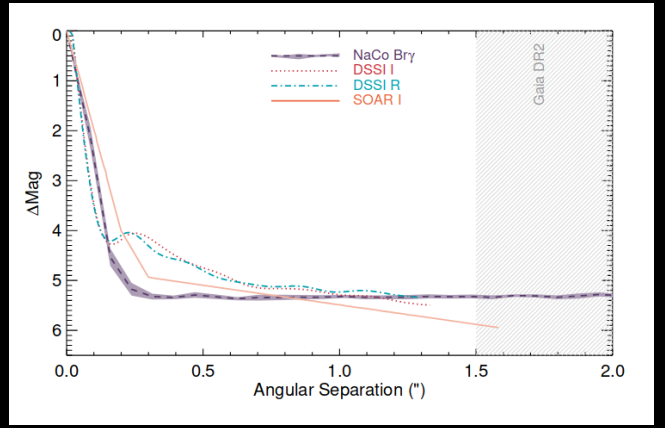
Dragomir et al. 2019



Nielsen et al. 2019

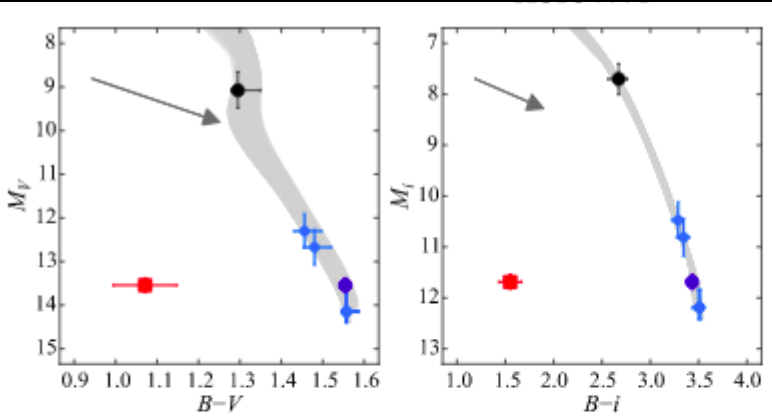


Günther et al. 2019



Quinn et al. 2019

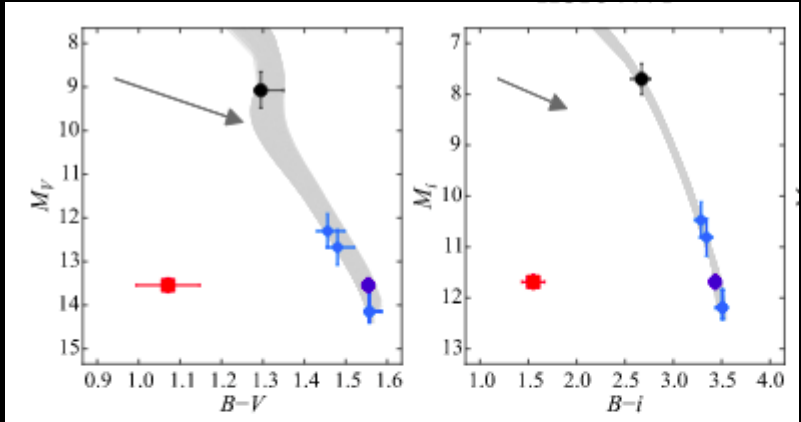
The Next Steps:



Hirsch et al. 2017

Isochronal + Statistical analysis of bound companions

The Next Steps:

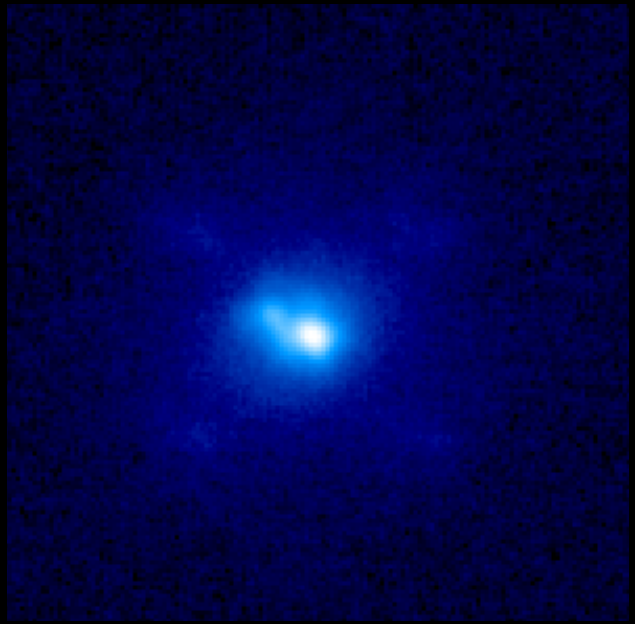


Hirsch et al. 2017

Isochronal + Statistical analysis of bound companions

Combine high resolution images with recon spectra and a complete GAIA search for companions

Also poster 21 (Ziegler)

Conclusions

- Gaia is a good first step
- High resolution imaging is essential for confirming planets, especially with small signals
- We have 70 TOIs imaged with 8m AO so far, with many more to come.
- Let us know any TOIs we should observe!