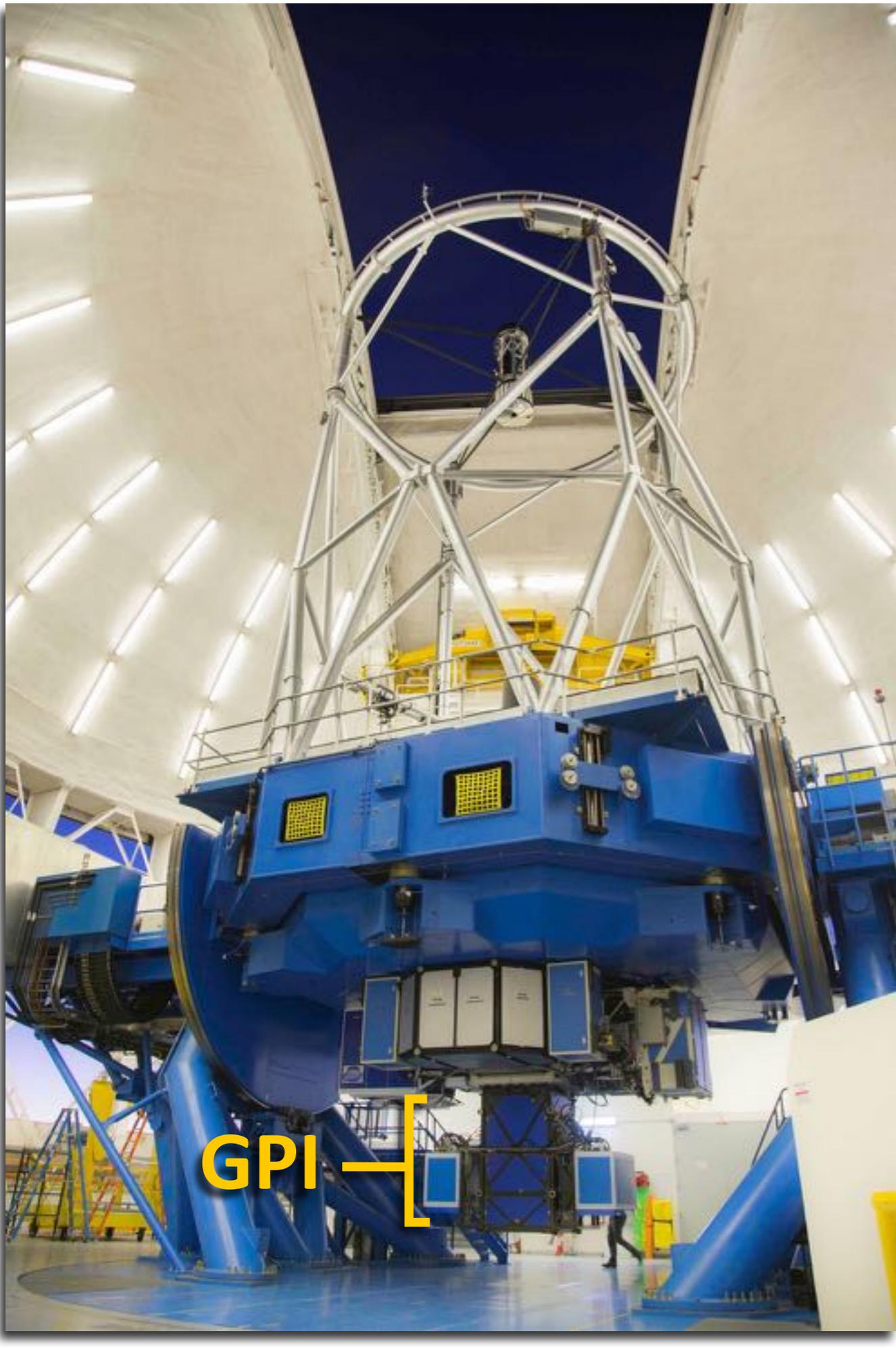


Status of the Gemini Planet Imager

& Disk
& Binary Star

Vanessa Bailey
Stanford (GPI)
JPL (WFIRST; starting 10/30)



GPI

GPI(ES) Collaboration

Macintosh, B.
Graham, J.R.
Barman, T
Doyon R.
Fabrycky, D.
Fitzgerald, M.
Kalas, P.
Konopacky, Q.
Marchis, F.
Marley, M.
Marois, C.
Patience, J.
Perrin, M.
Oppenheimer, B.
Song, I.
Artigau, E.
Beckwith, S.
Burrows, A.
Chen, C.
Chiang, E.

Chilcote, J.
Duchene, G.
Fortney, J.
Hinkley, S.
Ingraham, P.
Lafreniere, D.
Larkin, J.
Maire, J.
Matthews, B.
Metchev, S.
Morzinski, K.
Murray-Clay, R.
Palmer, D.
Poyneer, L.
Pueyo, L.
Rafikov, R.
Rice, Emily
de Rosa, Rob
Ruiz, M. T.
Savransky, D.

Saumon, D.
Schneider, A.
Soummer, R.
Sivaramakrishnan, A.
Thomas, S.
Vasisht, G.
Wallace, K.
Wiktorowicz, S.
Zuckerman, B.
Ammons, S. M.
Arriaga, P.
Bailey, V.
Bruzzone, S.
Bulger, J.
Birmingham, B.
Cady, E.
Choquet, E.
Cotten, T.
Czekala, I.
Dawson, B.

Dong, R.
Draper, Z.
Esposito, T.
Follette, K.
Fulton, B.
Gerard, B.
Greenbaum, A.
Hibon, P.
Hirsch, L.
Hom, J.
Howard, A.
Hung, L.-W.
Jensen-Clem, R.
Johnson-Groh, M.
Lawler, S.
Lee, E.
Lee, J.
Line, M.
Johan M.
Millar-Blanchaer, M.

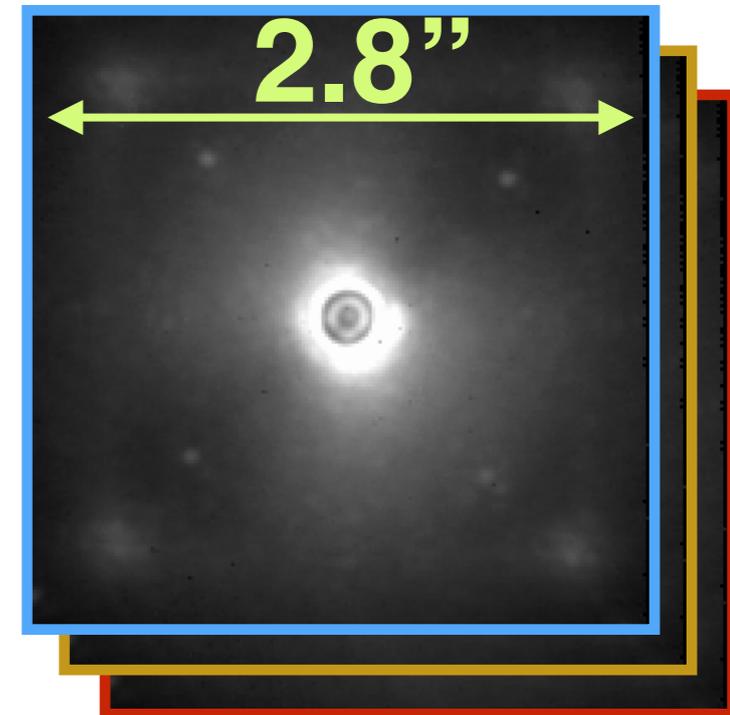
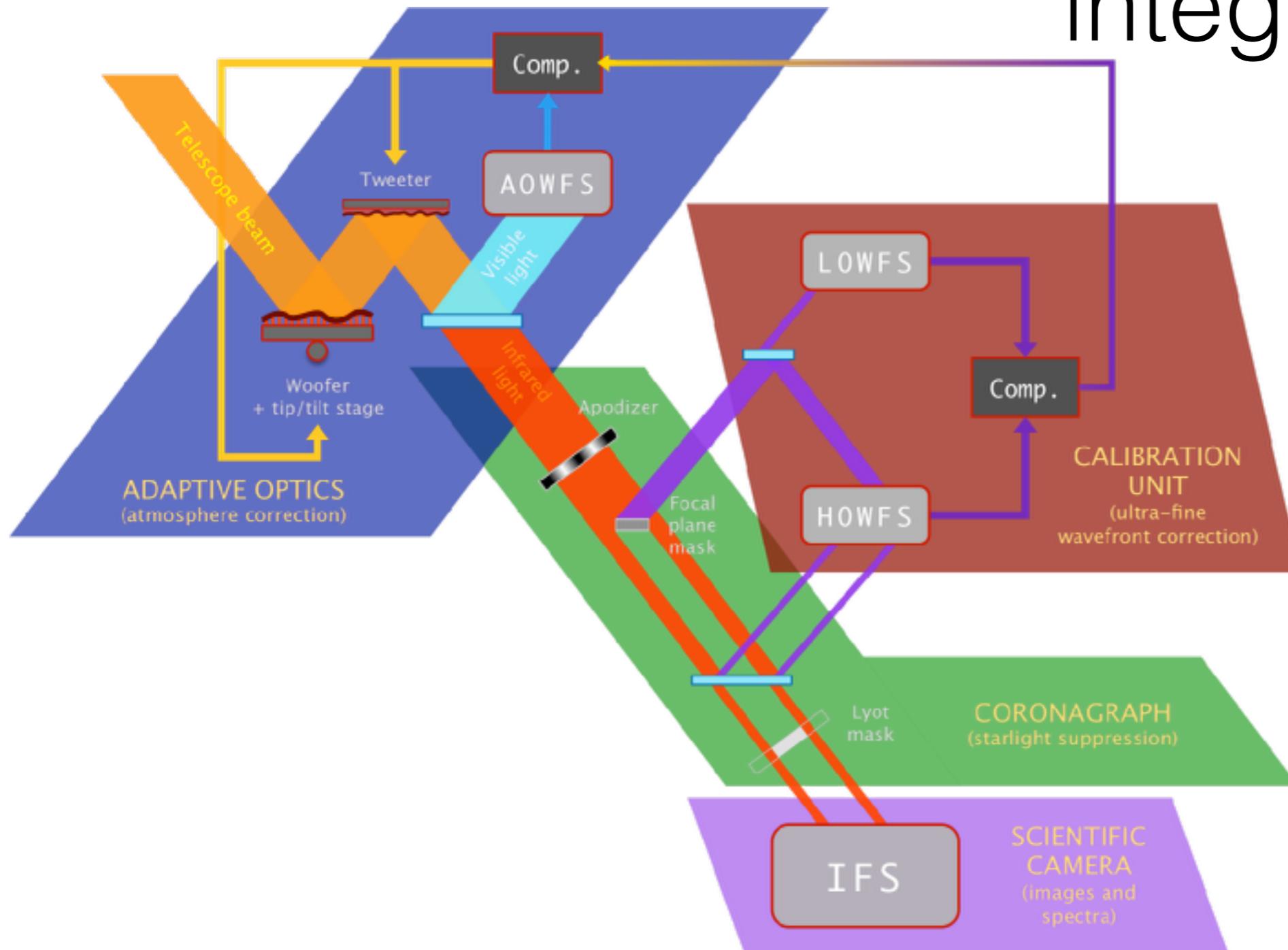
Morley, C.
Nielsen, E.
Norton, A.
Patel, R.
Poteet, C.
Rajan, A.
Rameau, J.
Rantakyro, F.
Ren, B.
Rice, M.
Rodigas, TJ
Ryan, D.
Ruffio, J.-B.
Salama, M.
Shapiro, J.
Stahl, K.
Vega, D.
Wang, J.
Ward-Duong, K.
Wolff, S.



Cornell University



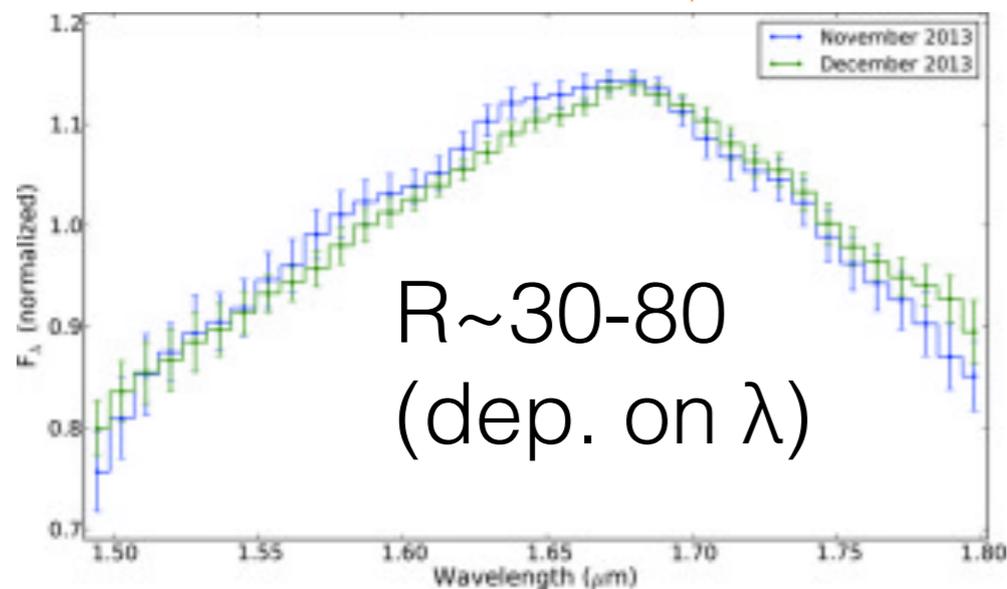
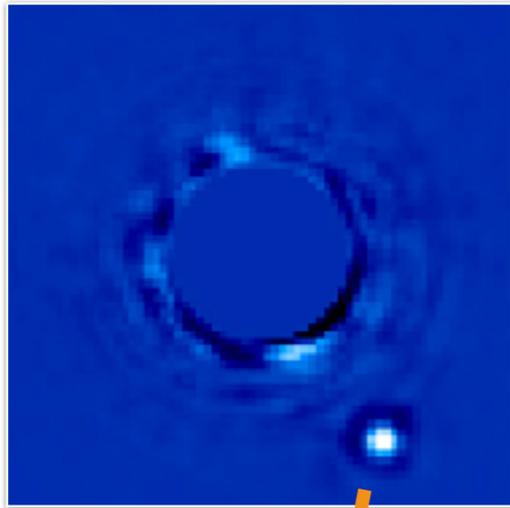
GPI is an AO-fed high-contrast integral field unit



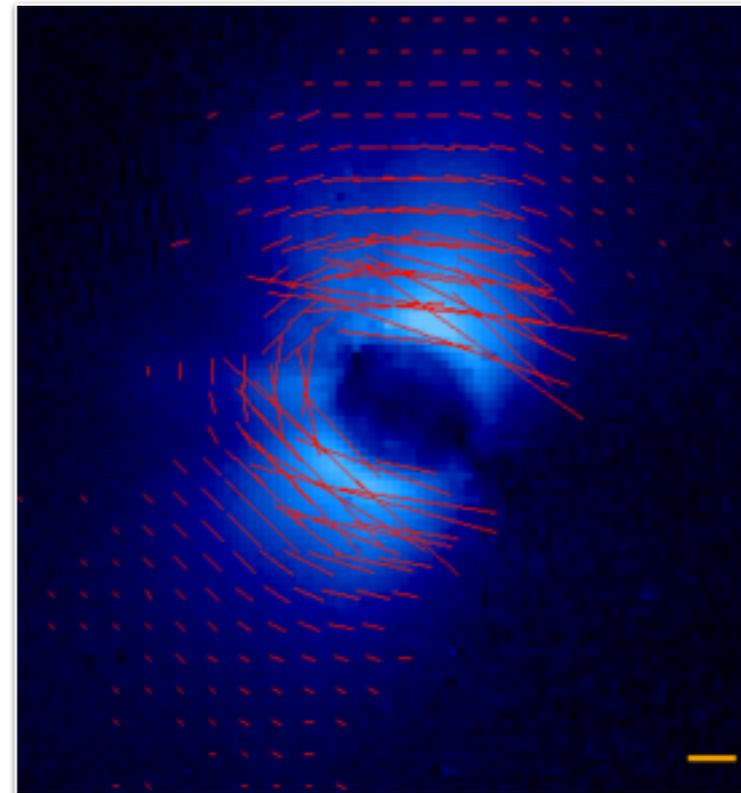
Y, J, H, or K

2 observing modes

Spectroscopy /
Photometry



Polarimetry

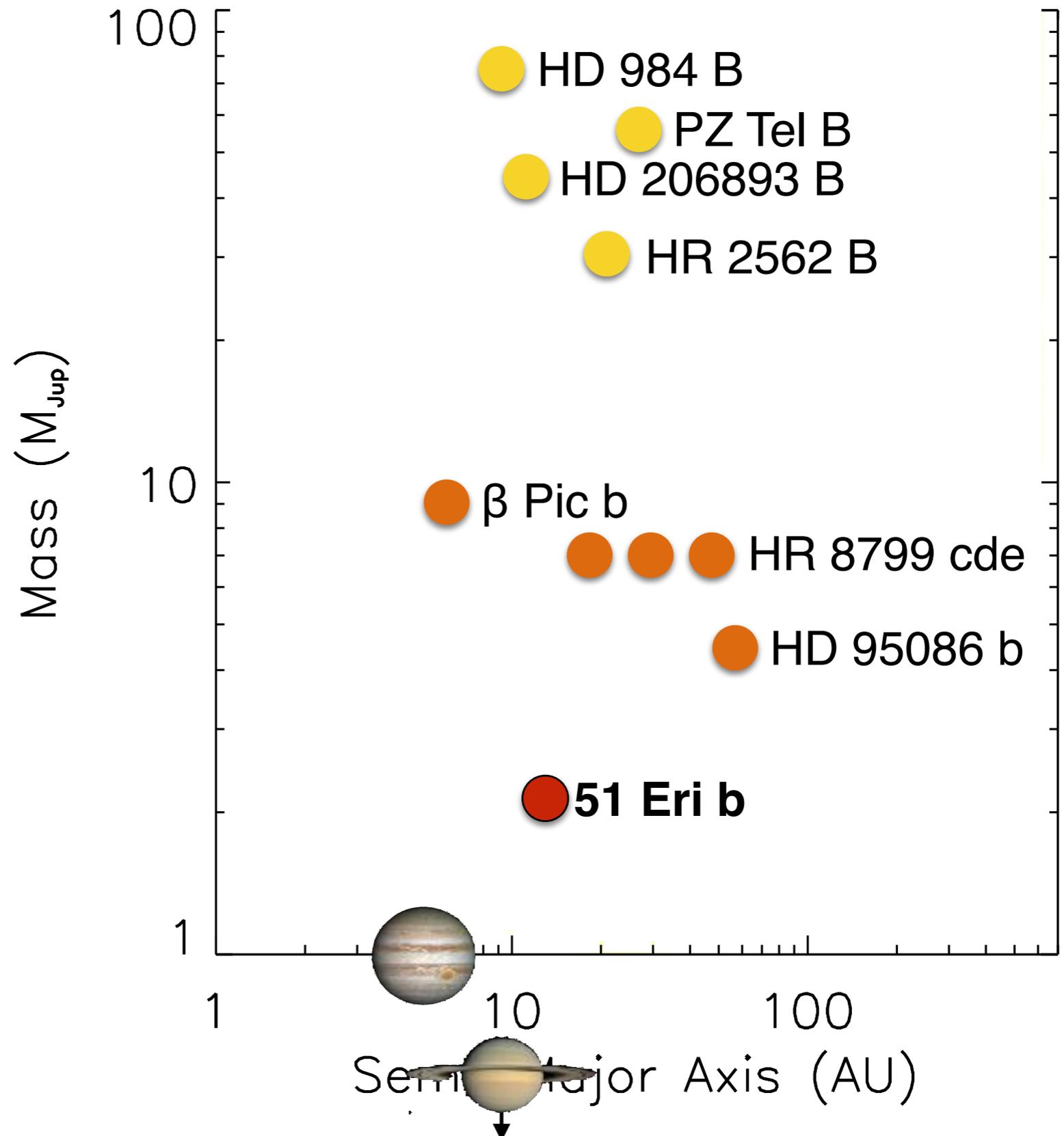


14mas plate scale

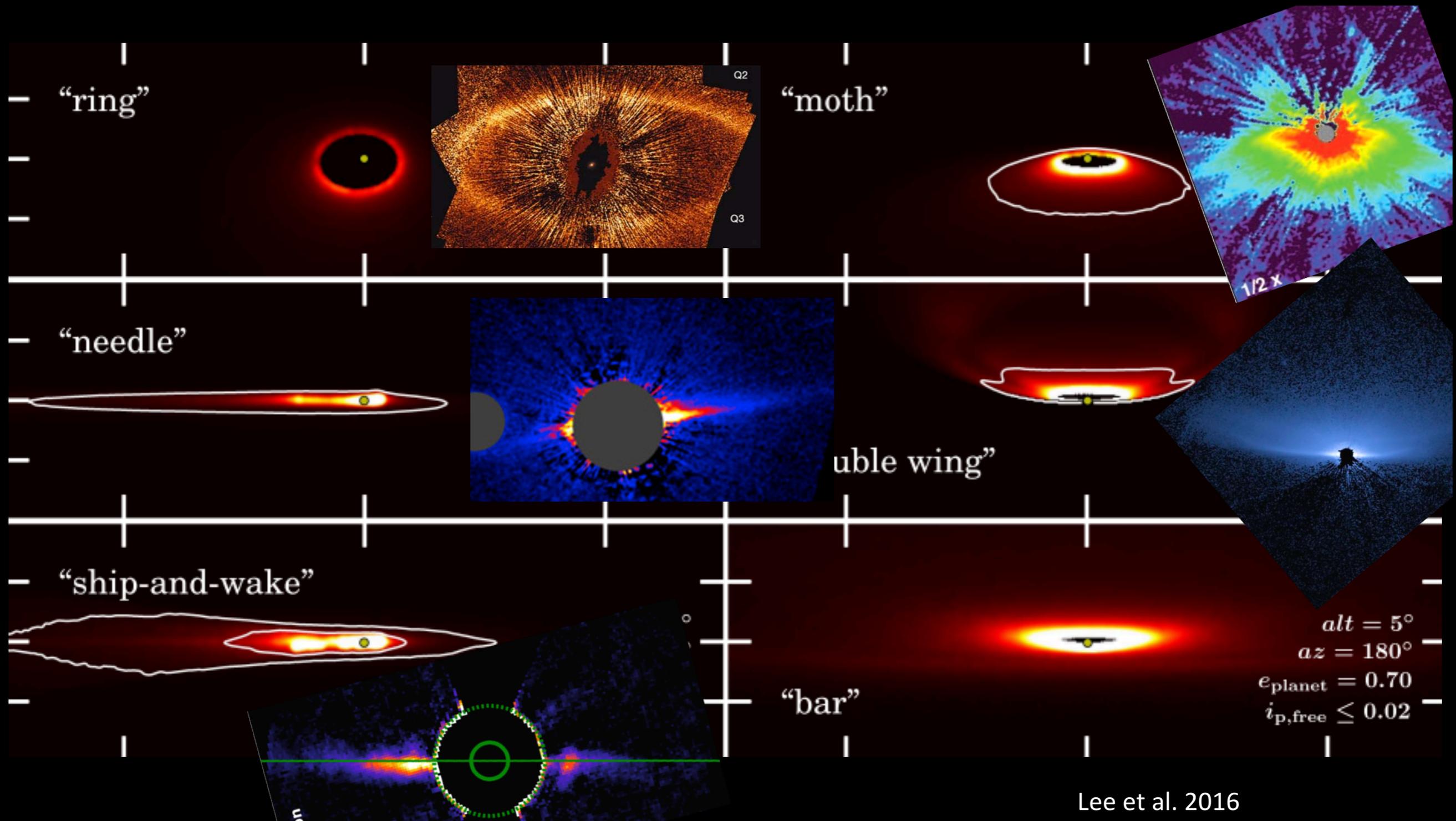
GPI Exoplanet Survey: Detections So Far

Search for young
Jovian planets at 3-50
AU .

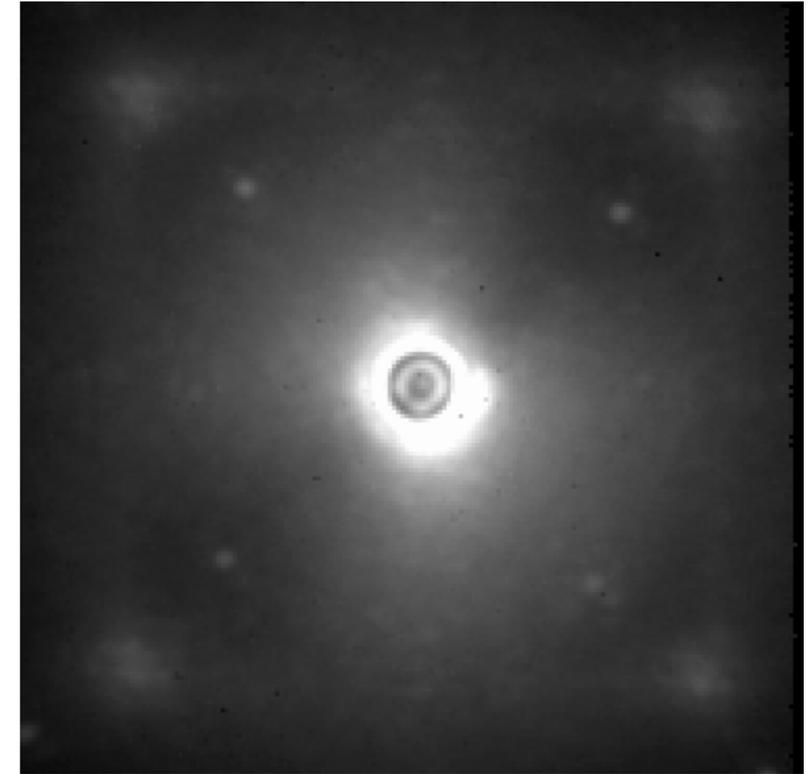
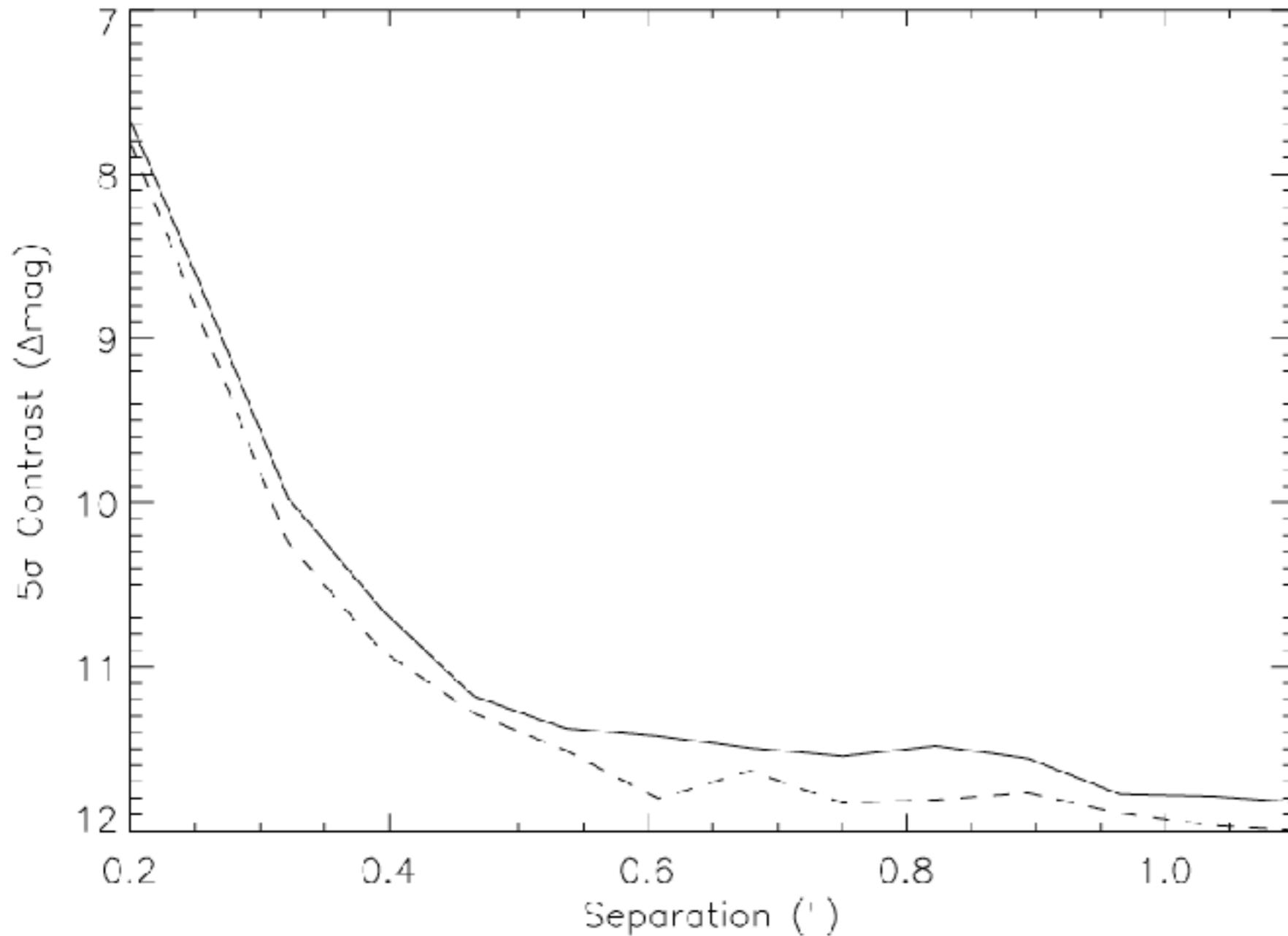
Observed ~380 out of
the proposed 600
nearby young stars.



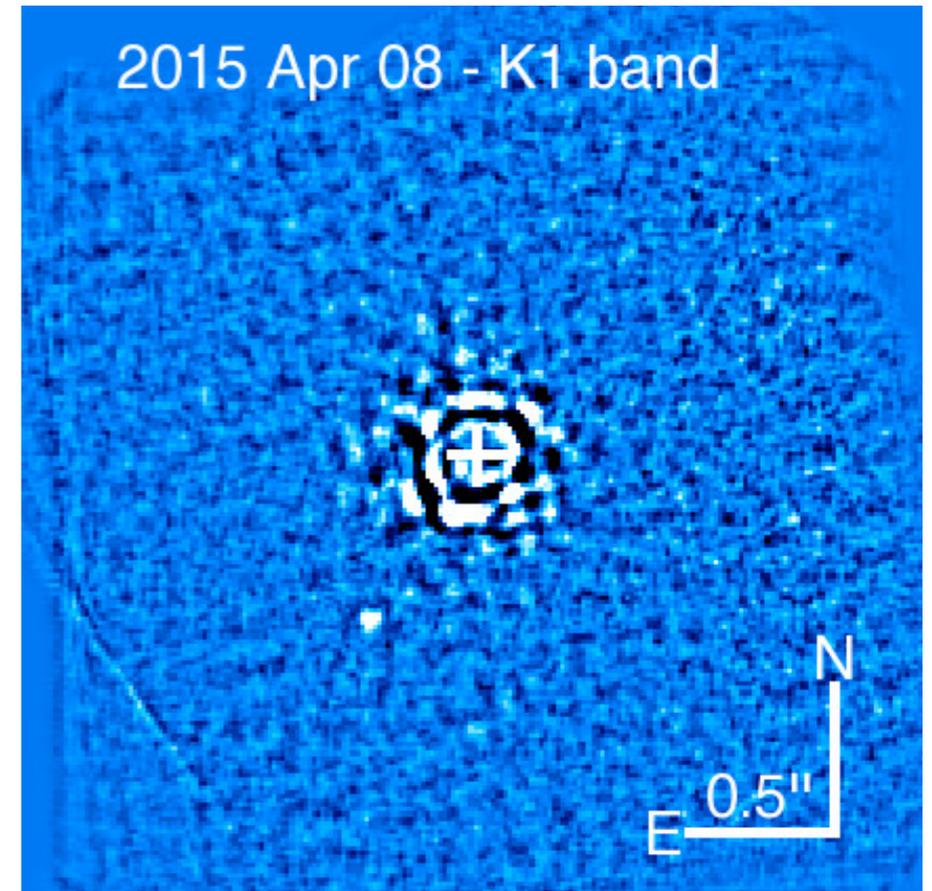
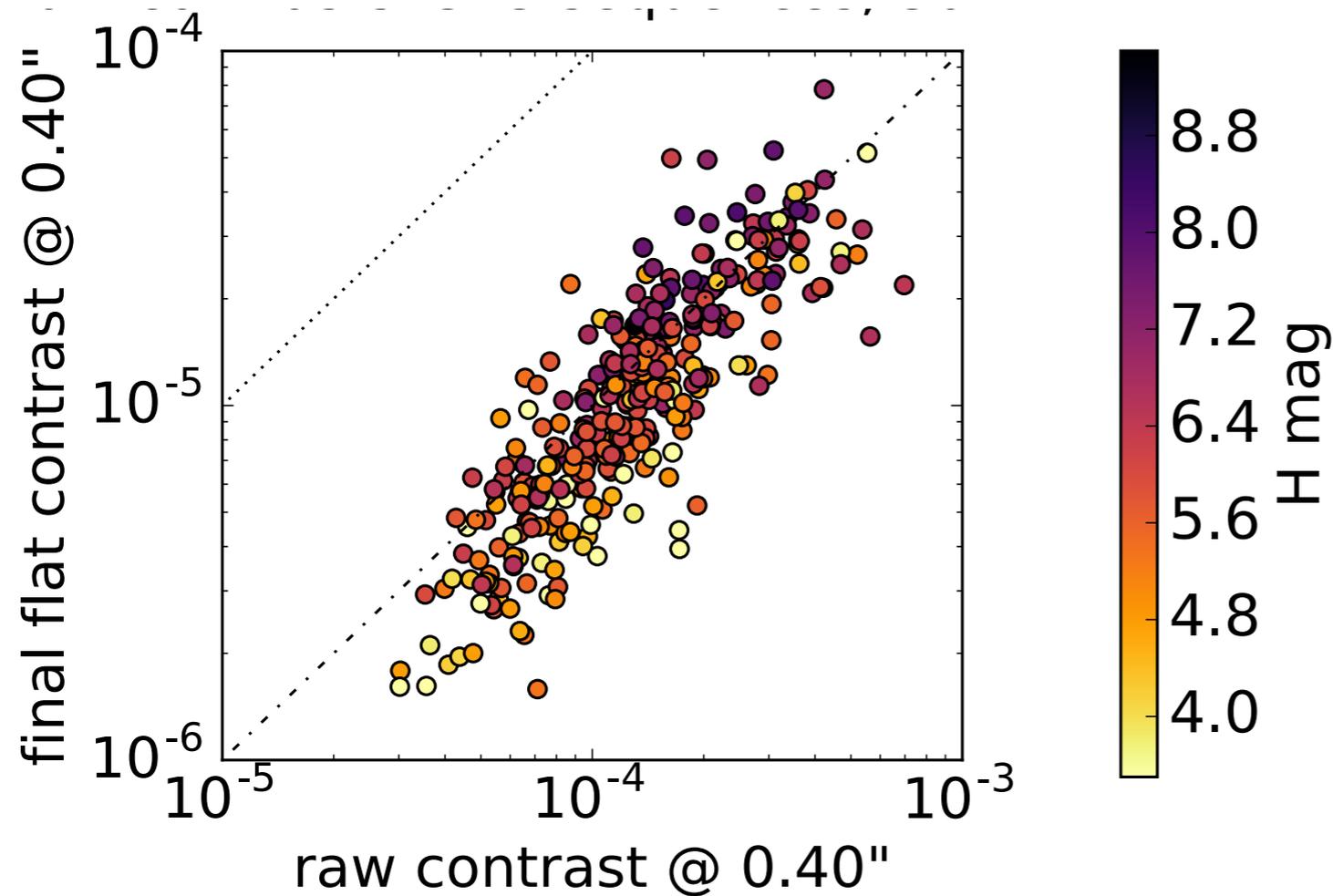
disk detection & characterization



Typical “**raw**” contrast = 10^{-4} @ $0.4''$
(1x 60sec H-band IFS image)

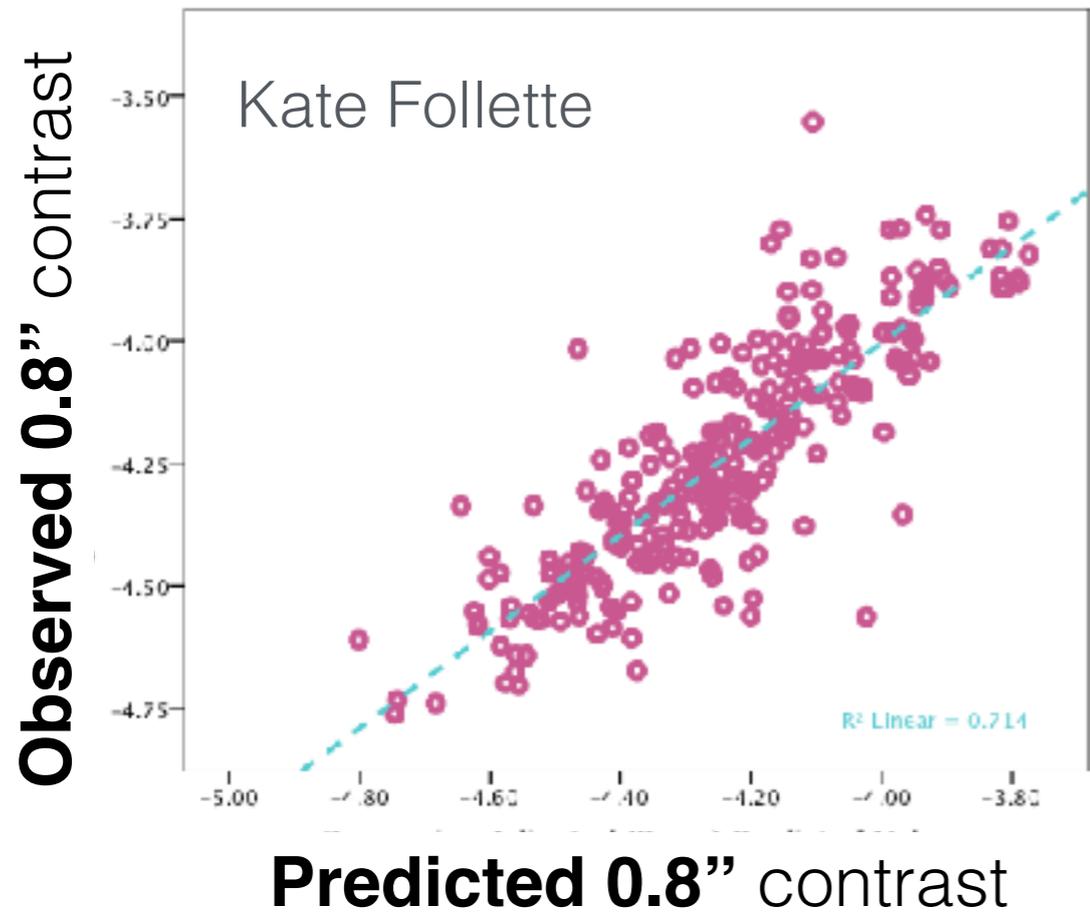


Final contrast $\sim 10\times$ better (postprocessed 1hr sequence)

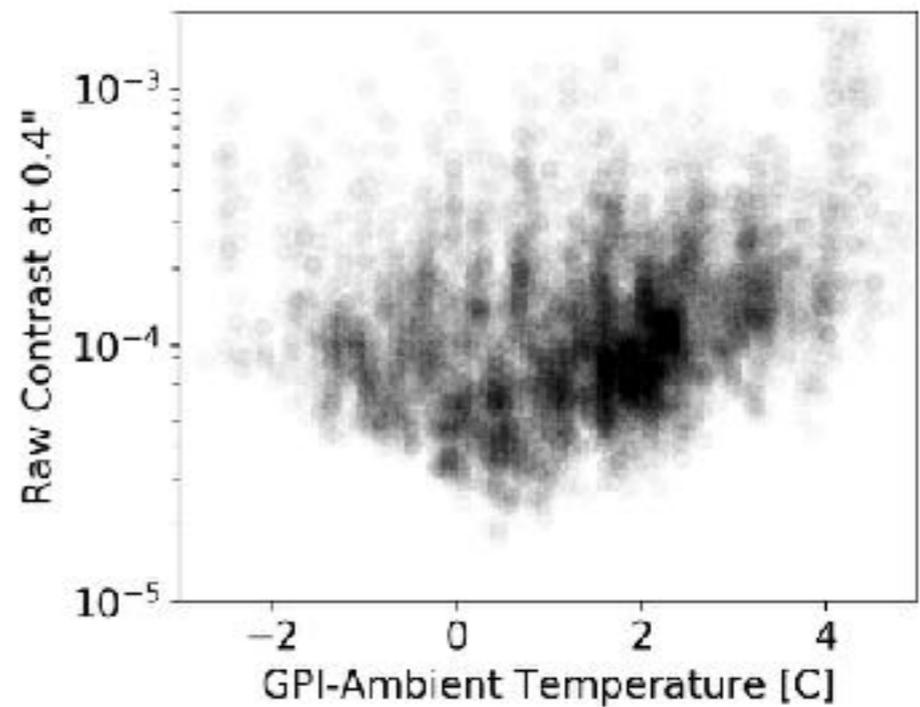
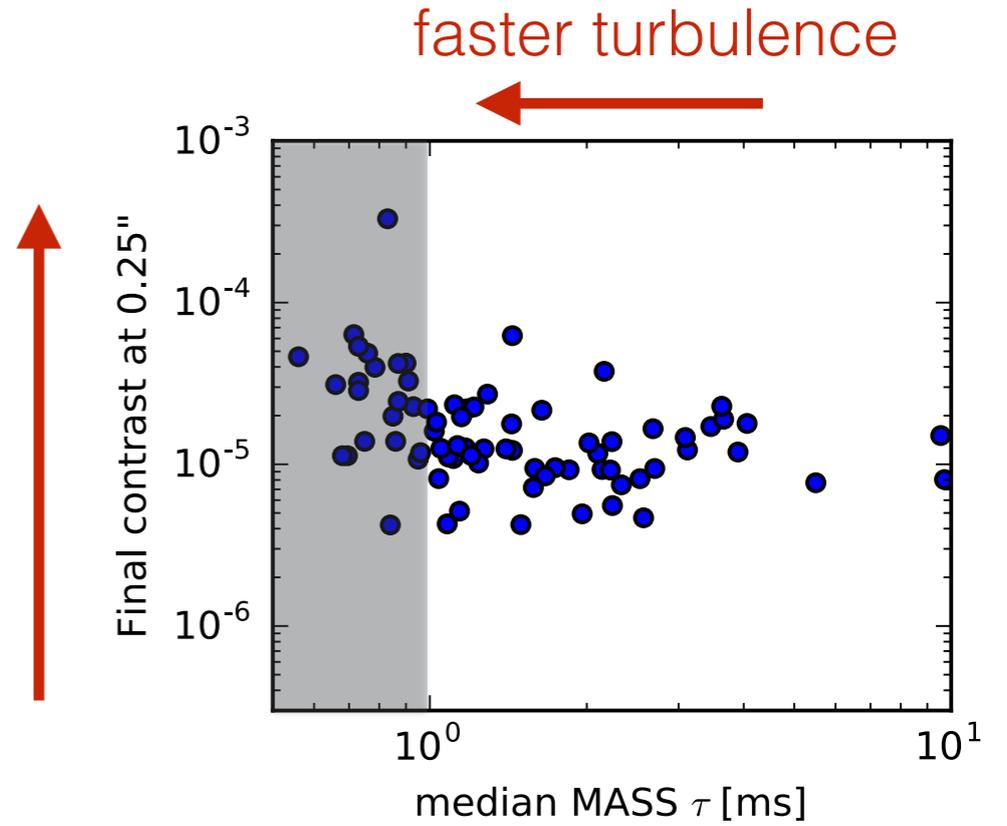


(conservative flat spectrum reduction ; CH4 redux is $\sim 2\times$ better)

Can predict ~60-70% of raw contrast variance



poorer detection limits

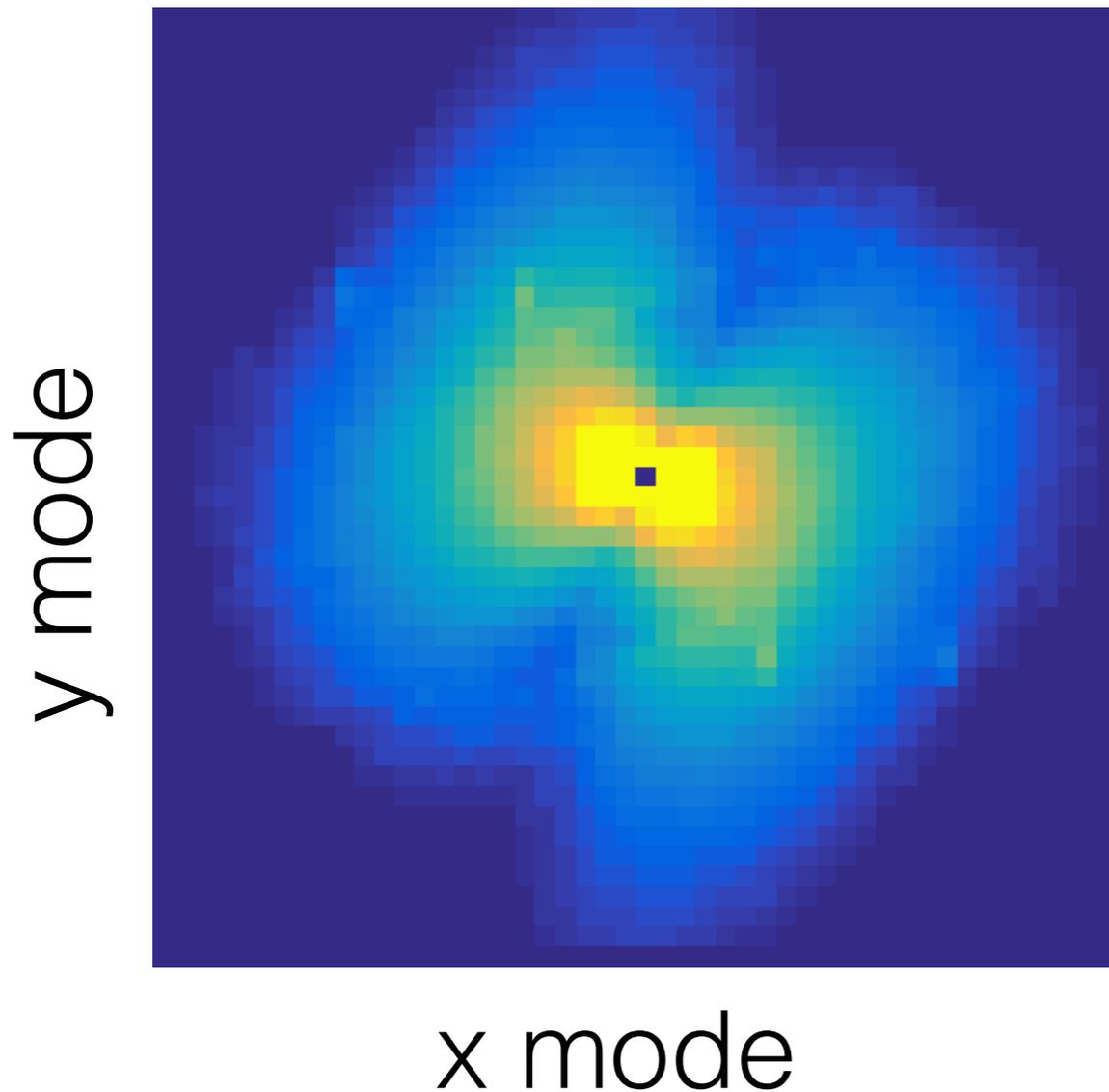


Next steps:

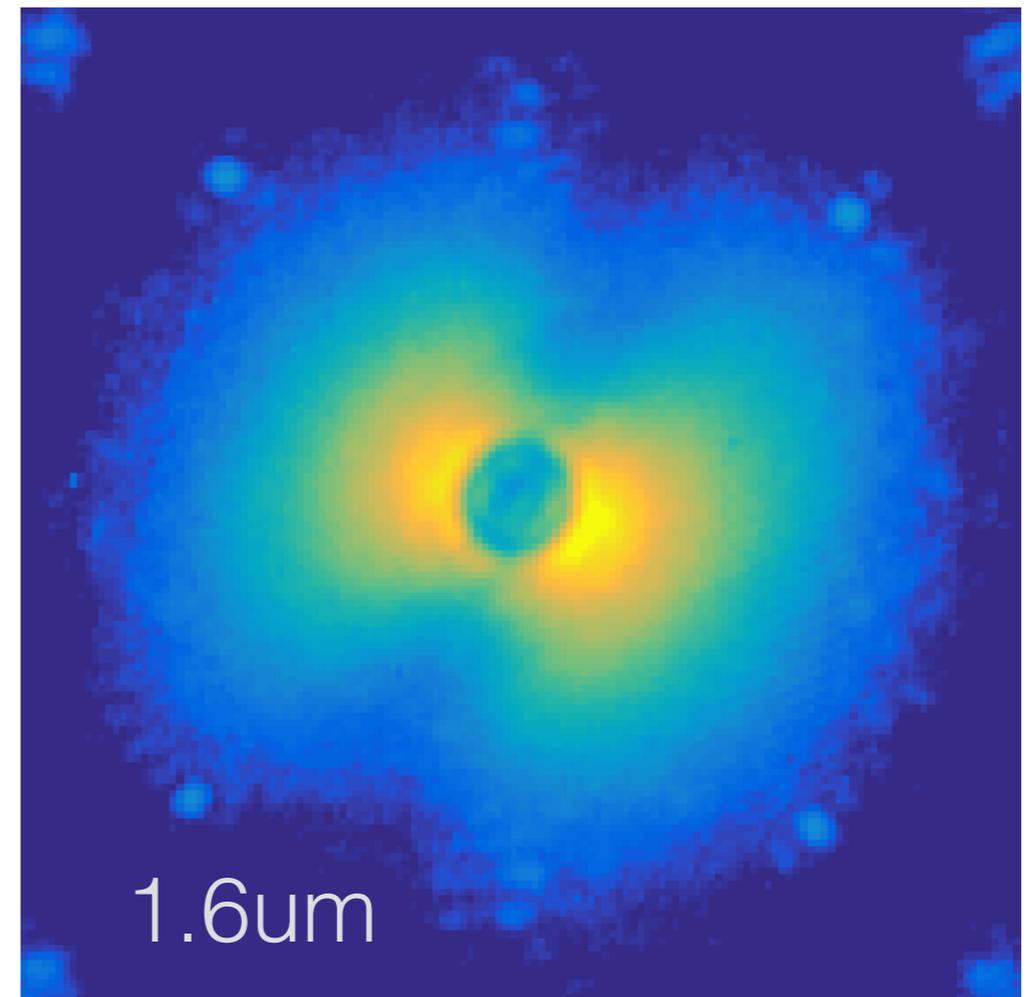
2D PSF modeling

- > PSF library
- > GPI 2.0
- > WFIRST

pseudo-closed loop
WFE² [nm²]



IFS img



Let's talk!

- WFIRST / CGI
 - bridging science & engineering requirements
- AO telemetry-informed post-processing
- improved wavefront sensing
- ...