Science Results from Community Access Time

Gail Schaefer

Send copies of talks to:

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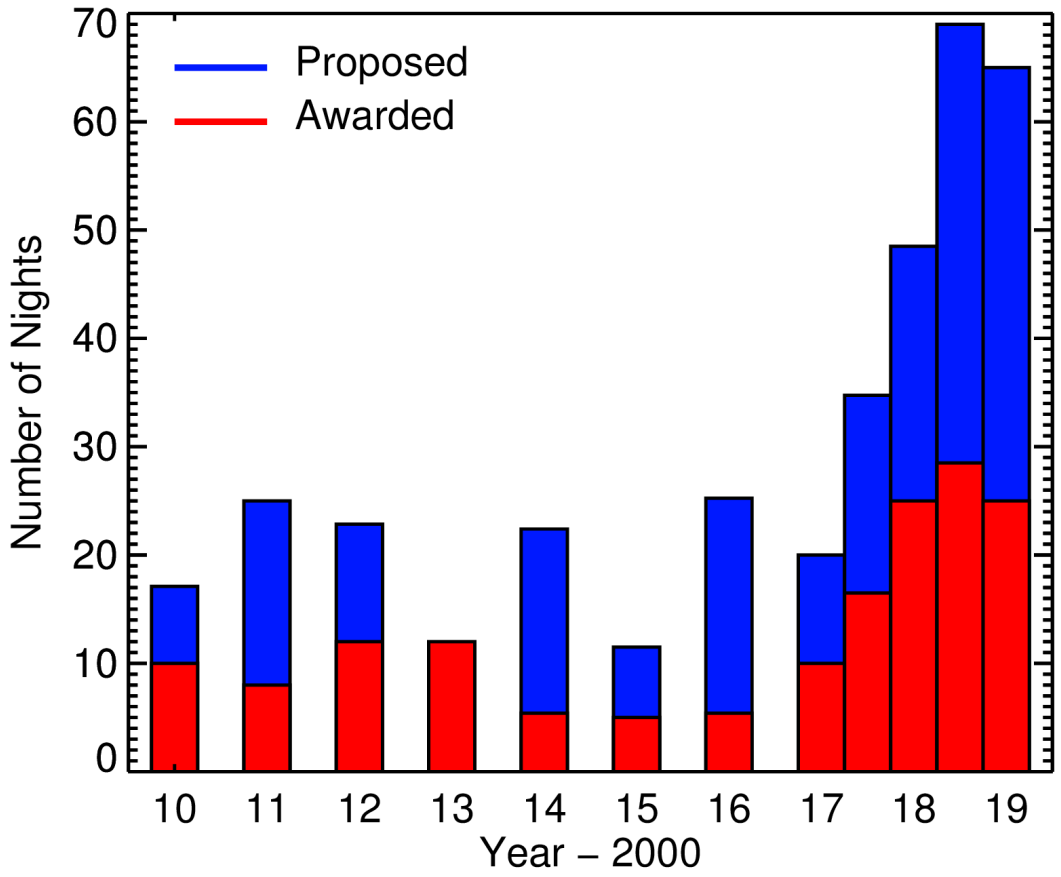
Open Access Time at CHARA



- NSF funded open access program began in 2017.
- 10-15 nights in 17A, 17B.
- 25 nights in 18A, 18B, 19A.
- Offering 30 nights in 2019B.
- Average over-subscription rate ~ 2.3.

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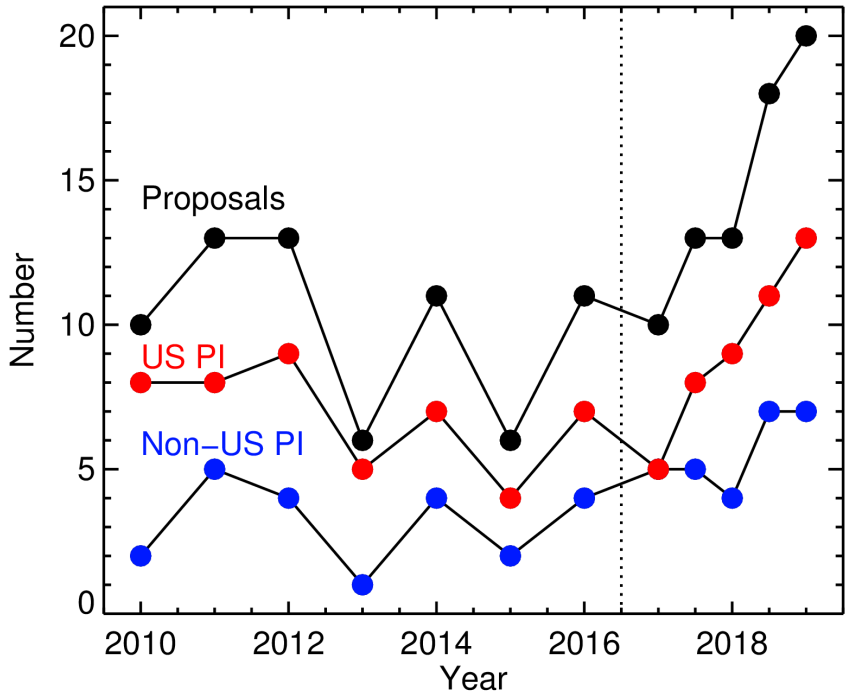
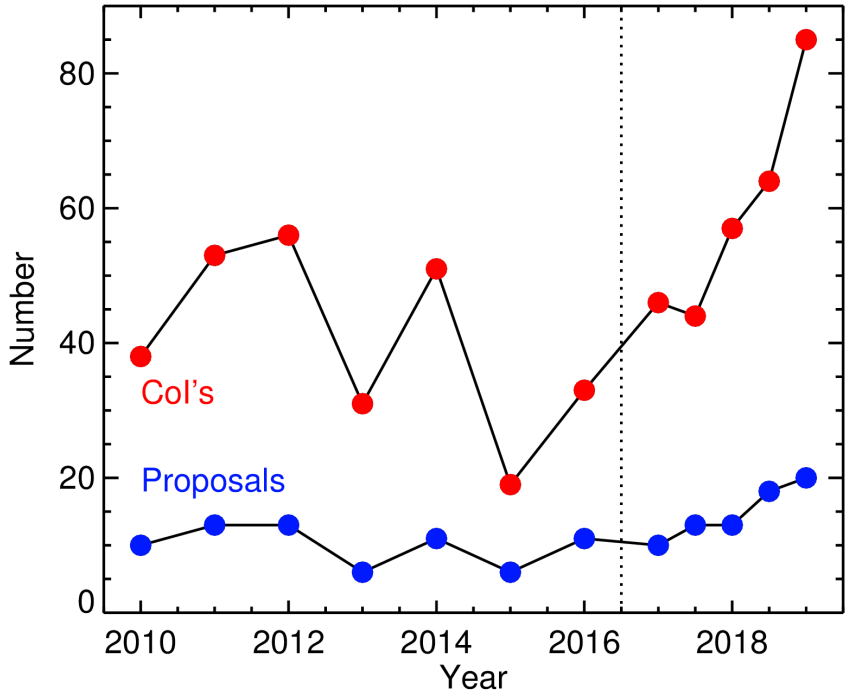


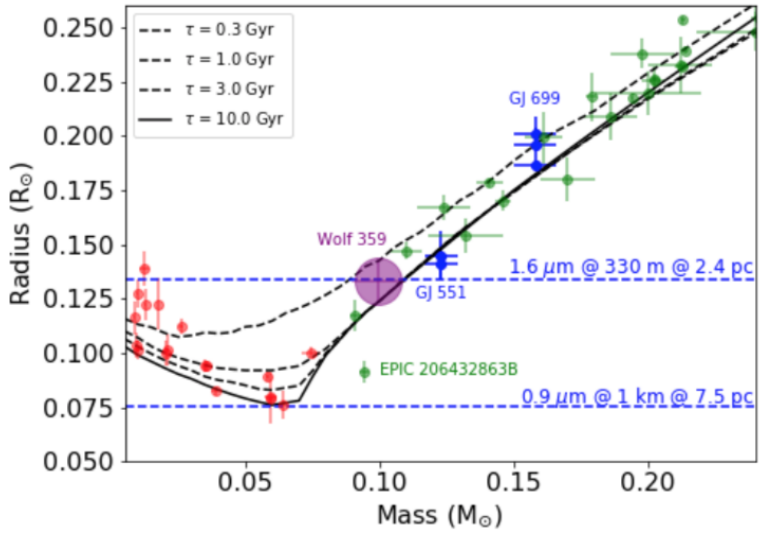


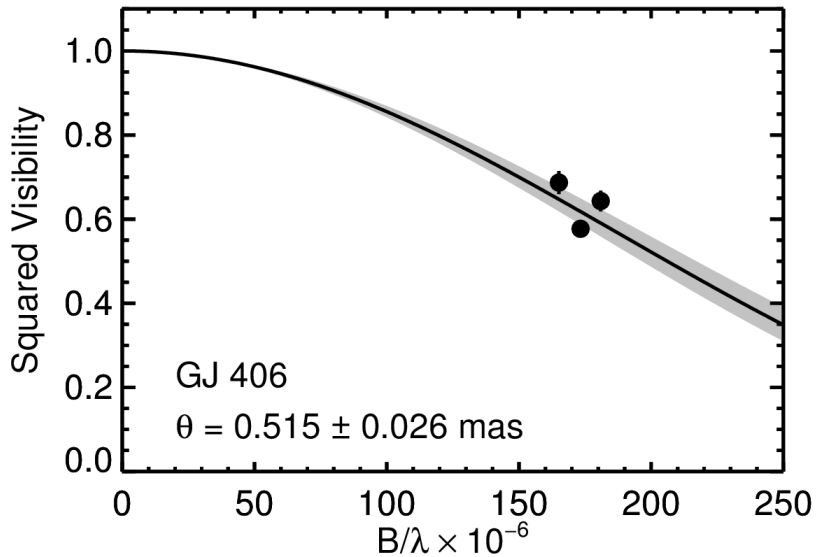
Recent Science Results from NOAO Programs

Diameters of the Coolest Stars

PI: Adam Burgasser (UC San Diego)

Blue: Interferometric radii
Green: Eclipsing binaries
Red: Transiting exoplanets

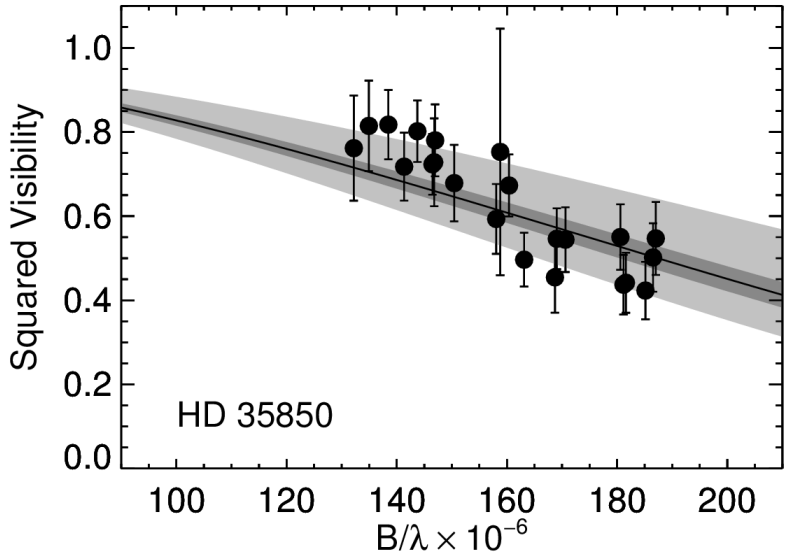


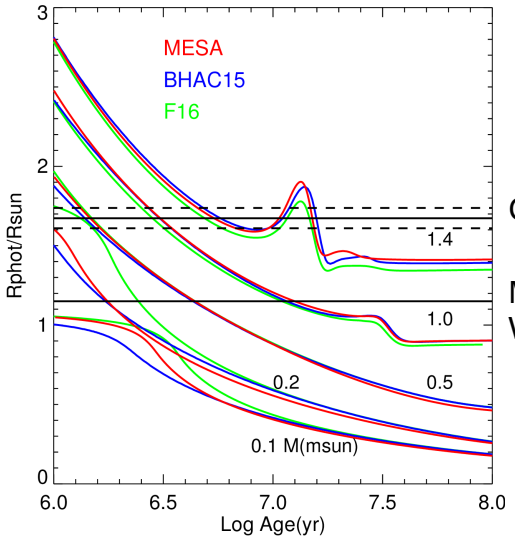


- Wolf 359: M6V, 2.4 pc away
- V = 13.5 mag, H = 6.5 mag
- θ = 0.52 +- 0.03 mas
- R = 0.13 +- 0.01 Rsun
- Radius inflated compared with evolutionary models.
- Obtained 3 brackets on 2018Apr18
- 5 half nights scheduled in April

Diameters of Nearby Young Stars

PI: Michal Simon (Stony Brook)





CHARA

McCarthy & White 2012

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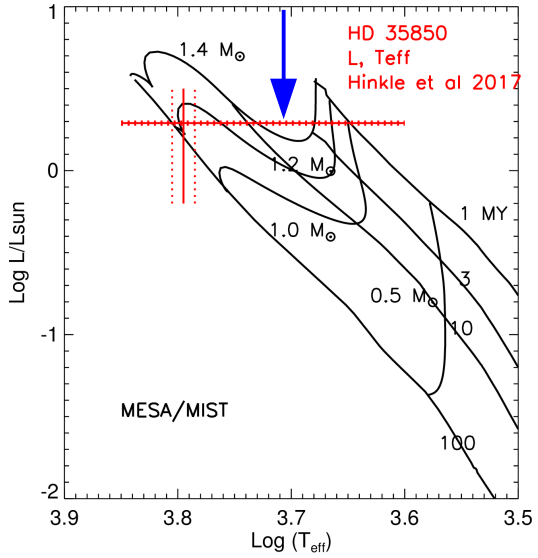

- F star in β Pic Moving Group
  - 10 - 30 Myr
- θ = 0.58 ± 0.02 mas
- Derive age from R, Teff, L compared with evolutionary tracks.
- 20% discrepancy between H and K diameters.
- Re-apply for more time to confirm results.

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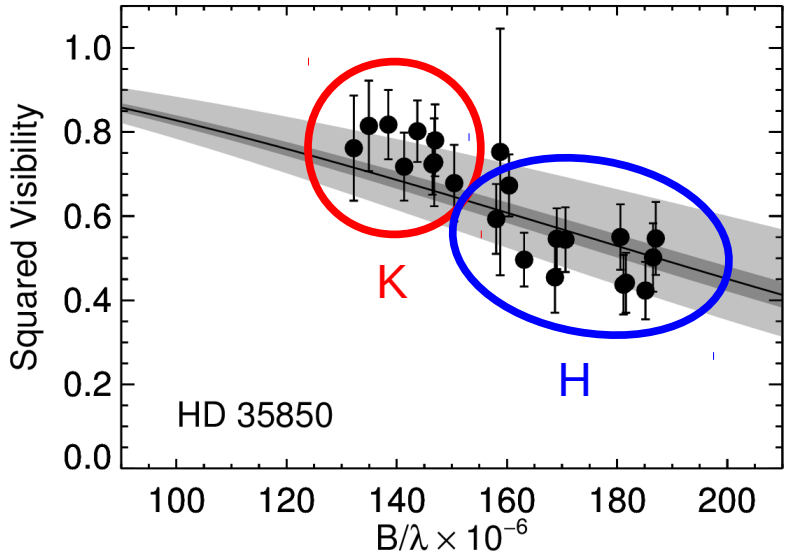

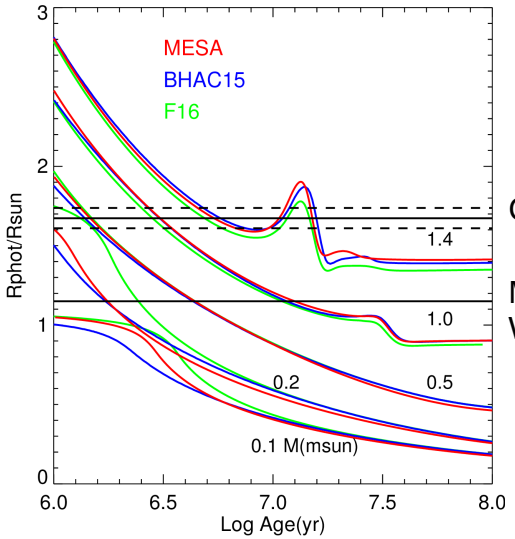

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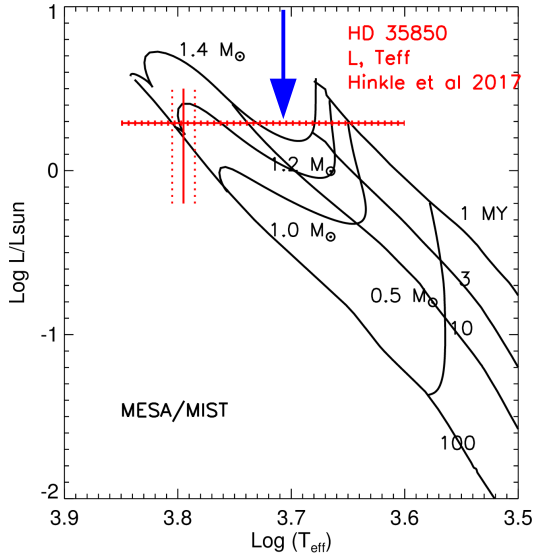

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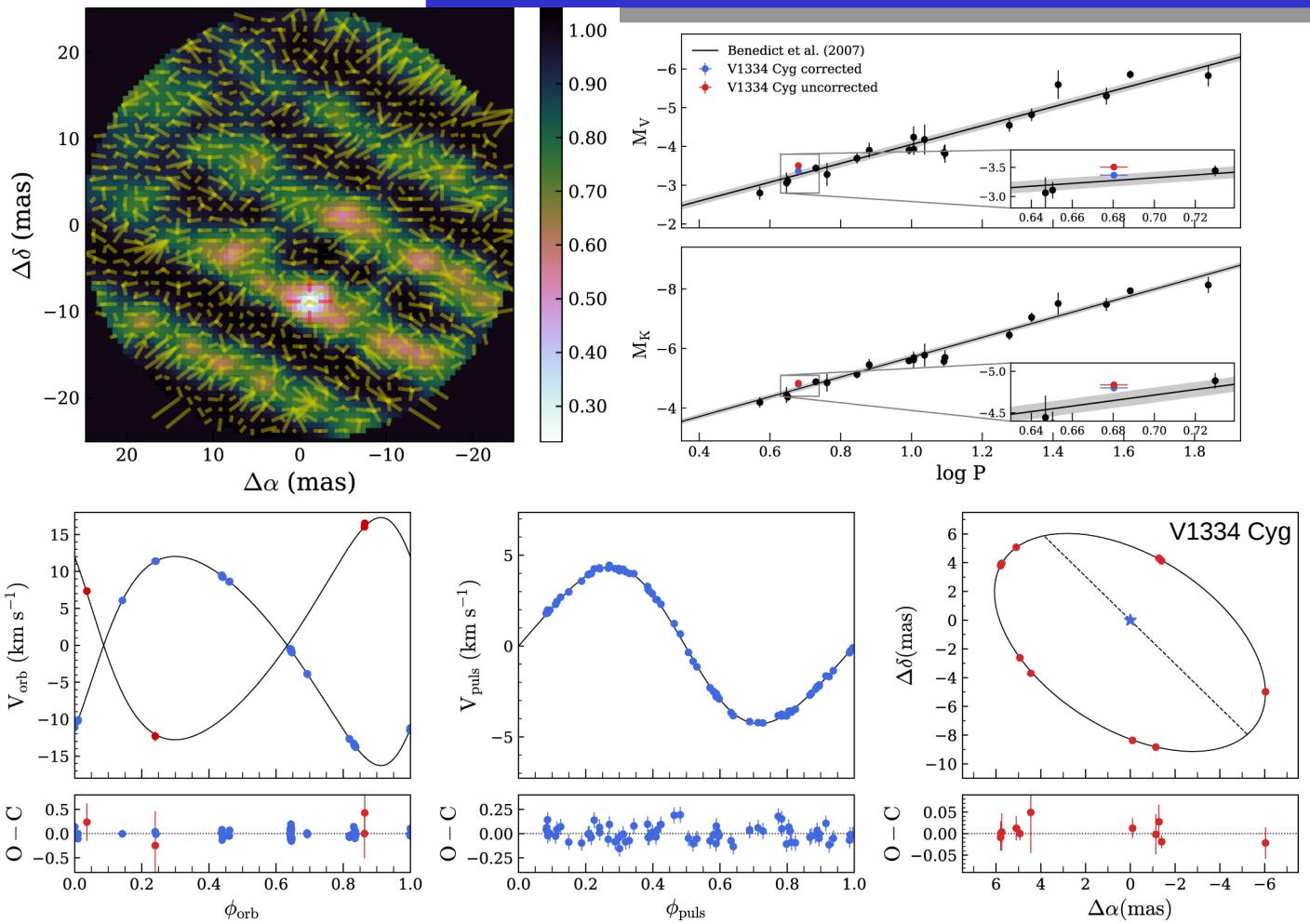
Multiplicity of Cepheids

PI: Alexandre Gallenne (ESO)

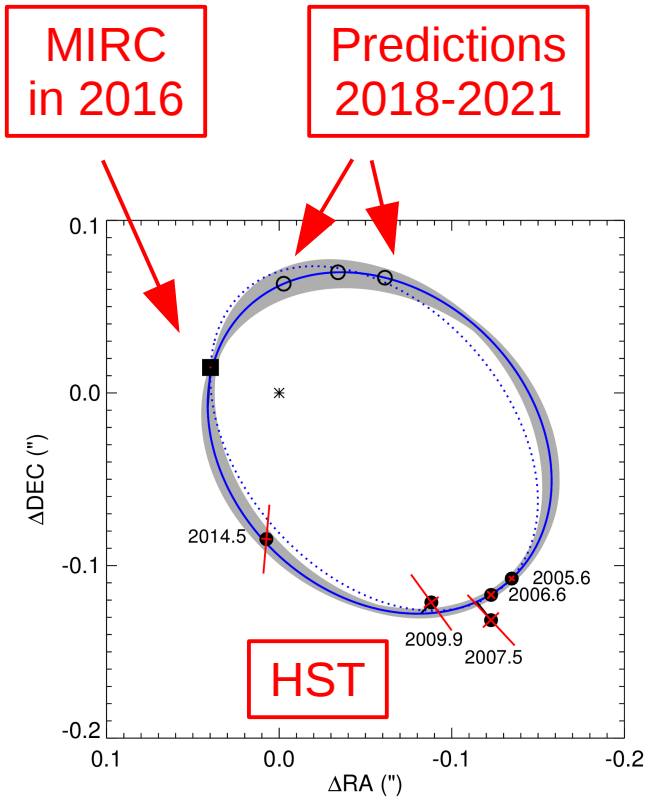
Gallenne et al. (2018)



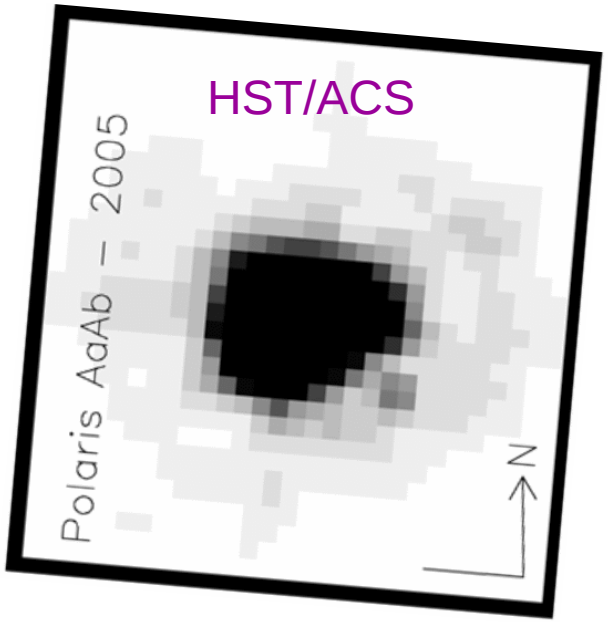
- 16 Binary Cepheids
- Detect faint companions, measure masses, and distances.
- Contrasts down to ΔH ~ 5-6 mag
- Accepted as long-term program (4 nights per semester)
- Continuation of productive internal program (Gallenne et al. 2018, 2019)

Dynamical Mass of Polaris

PI: Nancy Evans (SAO)



Evans et al. 2008, 2018



ΔV = 5.4 mag
sep = 170 mas

- Nearest and brightest Cepheid
- Long-term status
  - 1 night per semester
- Map orbit through periastron
  - sep ~ 40 mas
  - ΔH ~ 6.0 mag
- Combined with RV orbit – masses and distance.
- Confirmation of pulsation mode.

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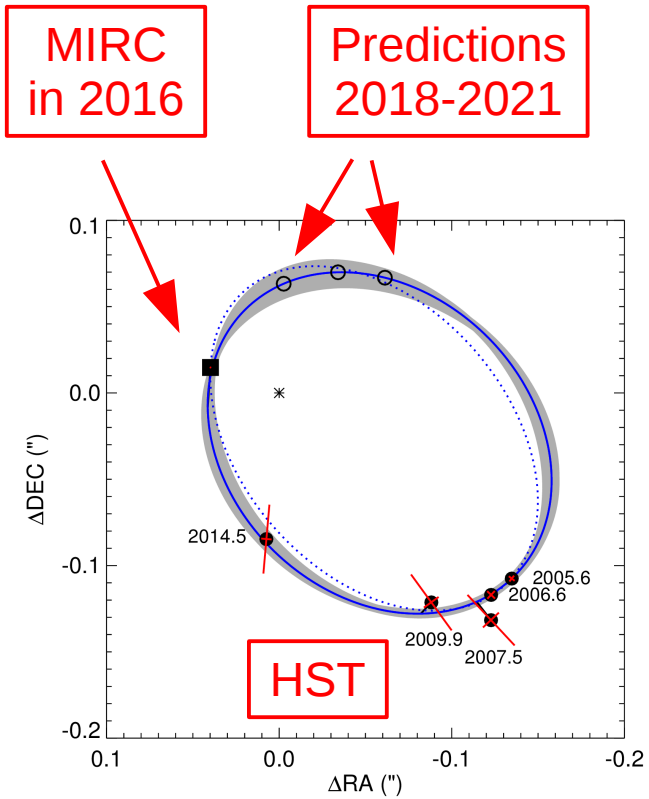

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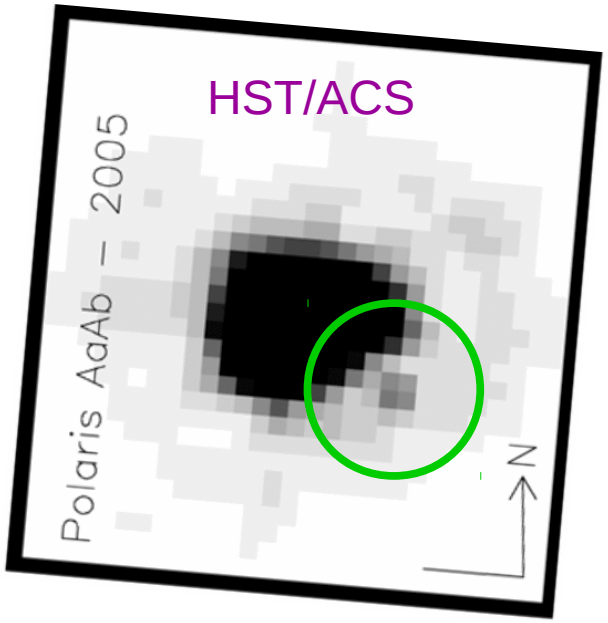

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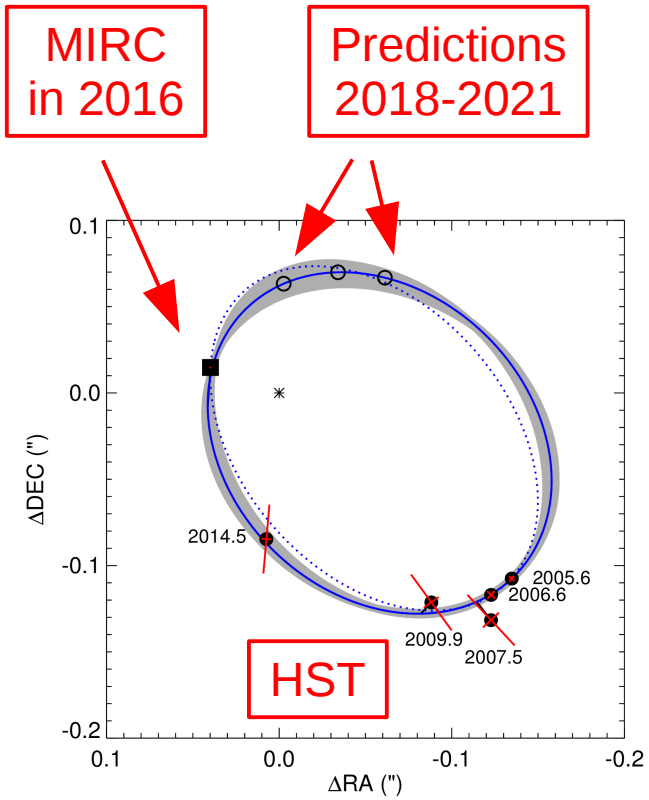
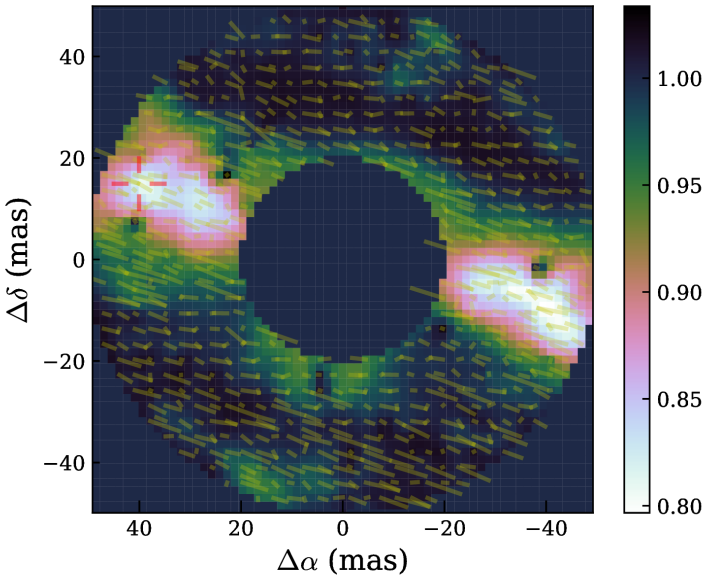


Evans et al. 2008, 2018

MIRC 2σ detection in 2016!



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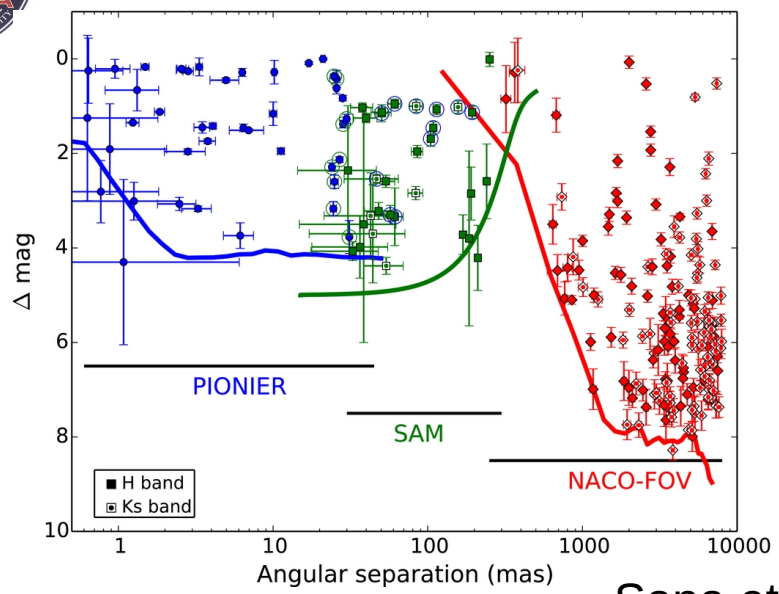
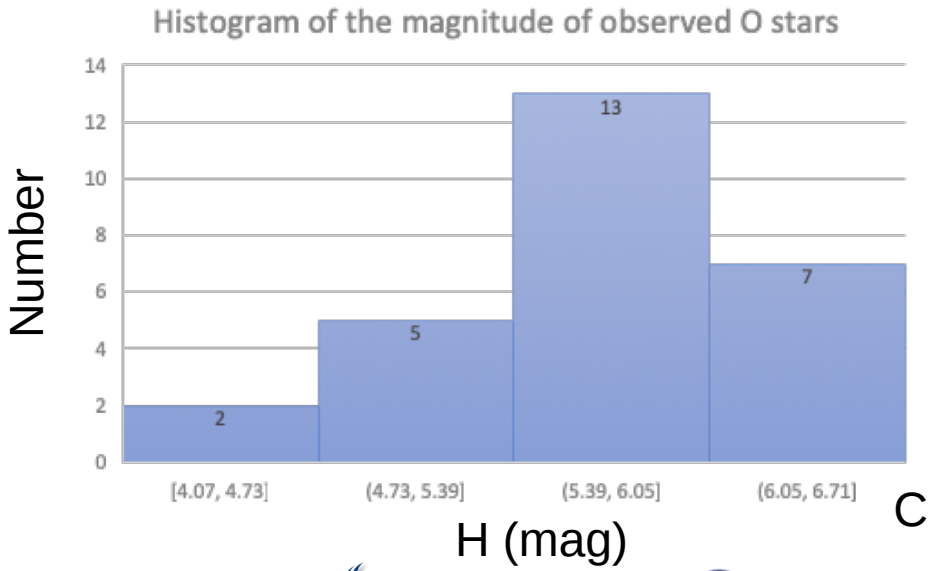
Northern Massive Stars at High Angular Resolution

PI: Cyprien Lanthermann
(Universite Grenoble Alpes)



Sana et al. 2014



CHARA Sample

- Multiplicity of massive stars.
- Goal: unbiased survey > 100 O-stars.
- Complements VLTI survey in south.
- Interferometry samples between RV and AO/imaging/speckle.
- 26 O-stars observed with MIRCX.
- 13 with strong binary signature.

More NOAO Programs in 2018

- Measuring Age and Stellar Masses from Binaries in Praesepe and α Persei Clusters (CLIMB)
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- Imaging the Expansion of Nova Ejecta (ToO)
  - PI: Laura Chomiuk (Michigan State University)

See Also – Talks Presented by NOAO Observers

- Exoplanet Host Stars (PAVO)
  - PI: Ellyn Baines (NRL)
- Radii of late-type dwarfs and exoplanet hosts
  - PI: Tyler Ellis (LSU)
- Differential Rotation on Spotted Stars (2019A)
  - PI: Rachael Roettenbacher (Yale)

Open Access Time at CHARA

- Proposals submitted and time allocated through NOAO TAC:
  - http://ast.noao.edu/observing/proposal-info
- Information on preparing proposals:
  - http://www.chara.gsu.edu/observers/applying-for-chara-time
- Proposals due at the end of March and September
- Next proposal deadline:
  - April 1 (for time in Aug – Dec)
- Encourage your colleagues to apply!