



Updates and Future Plans at the CHARA Array



Gail Schaefer

Director of the CHARA Array
Georgia State University

Tribute to Michal Simon

September 28, 1940 - April 18, 2025



NASA IRTF 10 Dec 2001



Mike Simon
September 28, 1940 - April 18, 2025
Mike has left us for his last observing run.
He promised to let us know if he finds anything interesting.



Tribute to Michal Simon

September 28, 1940 - April 18, 2025



THE ASTROPHYSICAL JOURNAL, 743:158 (6pp), 2011 December 20
© 2011. The American Astronomical Society. All rights reserved. Printed in the U.S.A.

doi:10.1088/0004-637X/743/2/158

MEASURED DIAMETERS OF TWO F STARS IN THE β PIC MOVING GROUP

M. SIMON¹ AND G. H. SCHAEFER²

¹ Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794, USA; michal.simon@stonybrook.edu

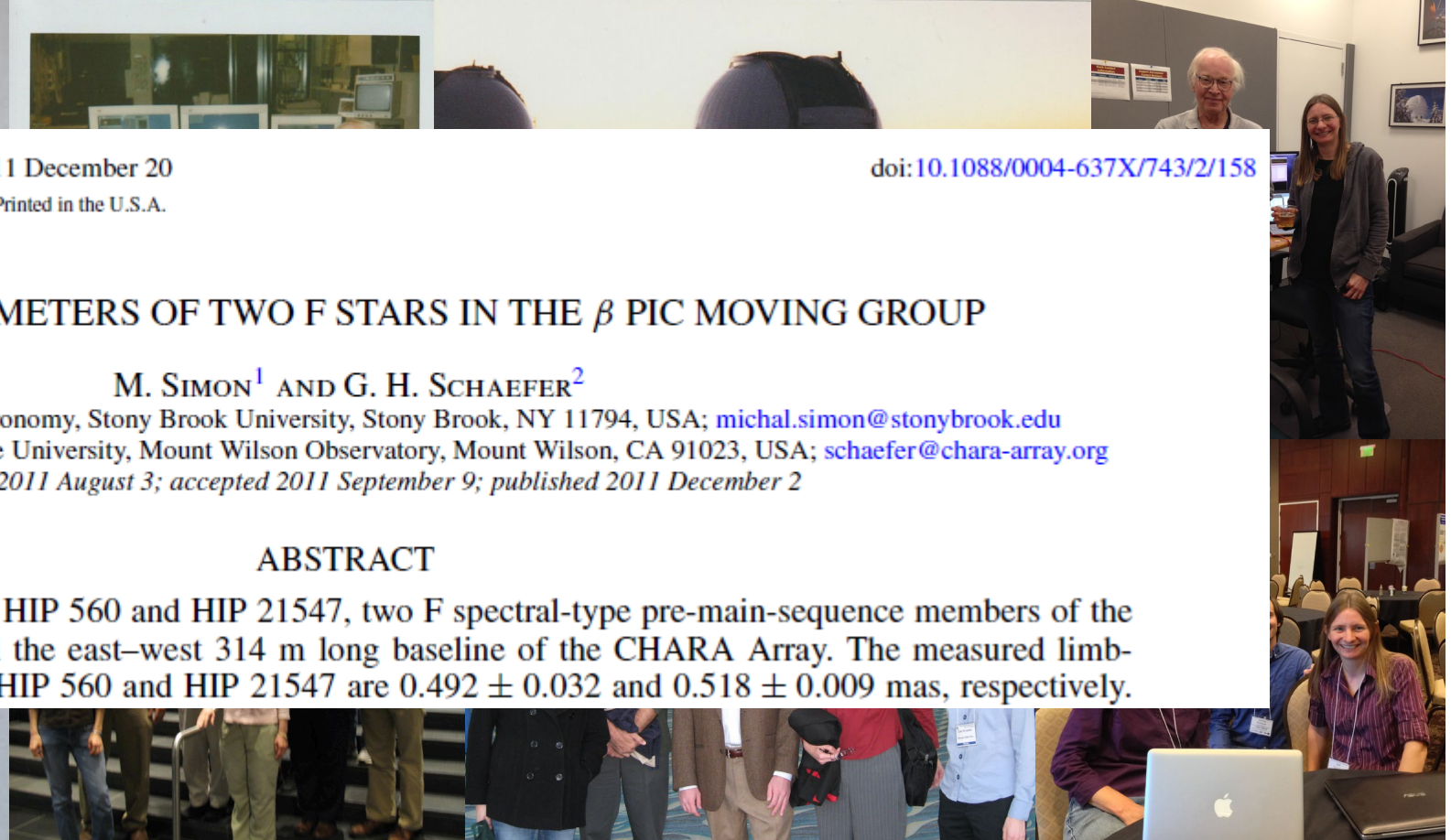
² The CHARA Array of Georgia State University, Mount Wilson Observatory, Mount Wilson, CA 91023, USA; schaefer@chara-array.org

Received 2011 August 3; accepted 2011 September 9; published 2011 December 2

ABSTRACT

We report angular diameters of HIP 560 and HIP 21547, two F spectral-type pre-main-sequence members of the β Pic Moving Group. We used the east–west 314 m long baseline of the CHARA Array. The measured limb-darkened angular diameters of HIP 560 and HIP 21547 are 0.492 ± 0.032 and 0.518 ± 0.009 mas, respectively.

Septem
Mike
observ
He promised to let us know if
he finds anything interesting.



Tribute to Michal Simon

September 28, 1940 - April 18, 2025



NASA IRTF 10 Dec 2001



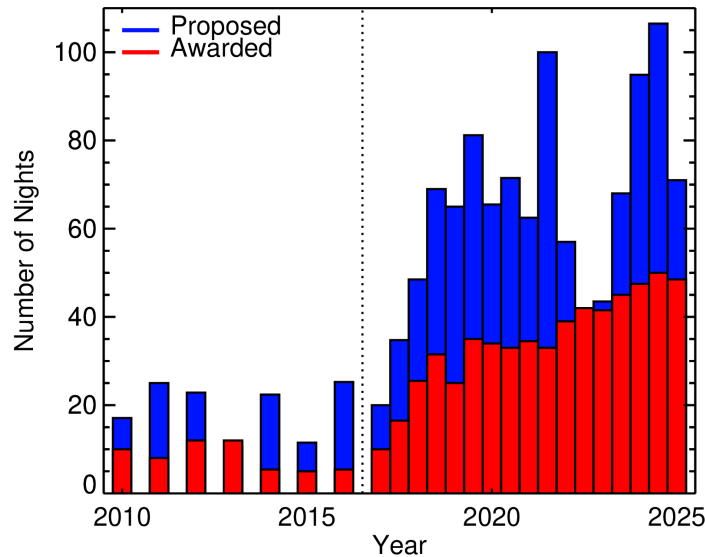
Mike Simon
September 28, 1940 - April 18, 2025
Mike has left us for his last observing run.
He promised to let us know if he finds anything interesting.



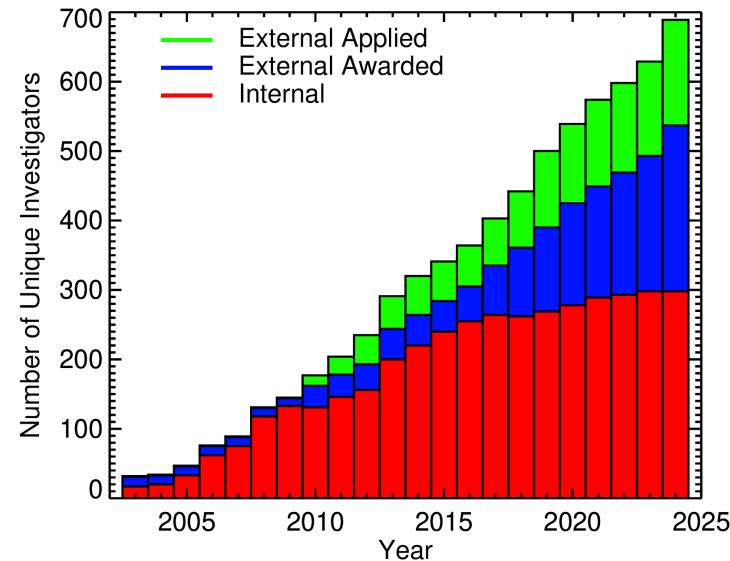
Open Access Program

Supported through NSF AAG Program through 2027 (\$3.5M)

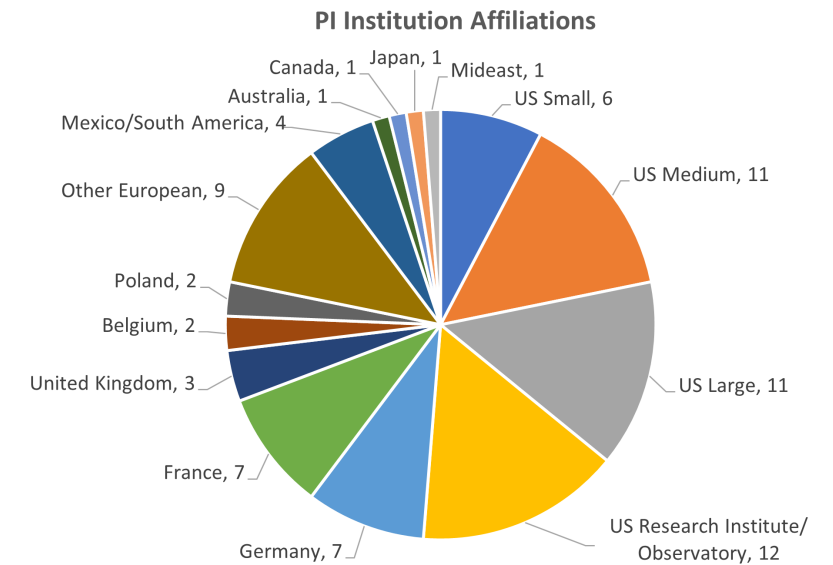
Average Oversubscription ~ 2



Over 400 astronomers have applied for open access time (PI + Col)



Open Access PI



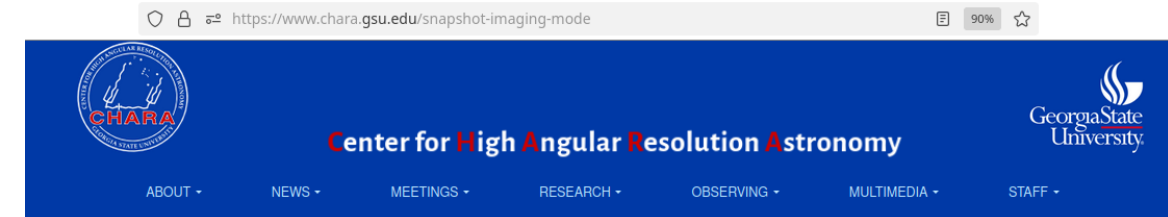
- 422 open access proposals submitted since 2010
- Open access PIs from over 80 distinct institutions

50 nights per semester open to broader community
Time allocated through NOIRLab



Fast Turn Around Snapshot Imaging Mode

- **New in 2025A!**
- Reserve up to 5 nights per semester
- Science Motivation
 - High impact findings
 - Exploratory epoch for larger proposal
 - Completion of project
 - Unusual/unexpected events
- Who can apply?
 - Priority for those without time scheduled
 - Targets not already in approved programs
- www.chara.gsu.edu/snapshot-imaging-mode



Fast Turnaround Snapshot Imaging Mode

We are implementing a new Fast Turnaround Snapshot Imaging mode at the CHARA Array. We will reserve up to 1 night per month of open access time for this new mode. During the 2025A semester, the snapshot observations will be scheduled on May 6, 2025 (full night) and June 1 and 3, 2025 (first half nights). The observations will be collected with the [MIRC-X/ MYSTIC](#) combiners in the near-infrared *H* and *K*-bands. The snapshot observations will consist of a single CAL1-SCI-CAL2 set (~ 1.5 hours of time).

Snapshot imaging proposals should fill one of the following criteria:

- Spatially resolved confirmation of high impact findings.
- Exploratory observation as a check on feasibility before applying for a standard proposal.
- Following up unusual/unexpected astronomical events.
- Completion of a project to allow publication, when one more set of data is needed for confirmation.

Who Can Apply for the Snapshot Imaging Mode?

The snapshot imaging mode is open to all observers. Priority will be given to observers who do not have existing time scheduled at the Array and for targets that are not already included in peer-reviewed science programs that were awarded time.

Review of Snapshot Proposals

During the trial phase of the snapshot imaging program, the proposals will be reviewed by CHARA staff. The proposals will be evaluated based on the merit of the science, impact of the observations, timeline for publication, and/or the need for a feasibility check.

Snapshot proposals can be submitted at any time during the current observing semester and will stay active until the end of the semester. Principal Investigators will be notified at least one week before the observation if their proposal is selected to be scheduled.

How to Apply for the Fast Turnaround Snapshot Imaging Mode

Please fill out the following form to provide a description of the requested observations and a short summary of the scientific significance:

[Application for the Fast Turnaround Snapshot Imaging Mode](#)

For standard proposals please following the instructions on the [Applying for CHARA Time](#) page.



CHARA – AAVSO Collaboration Update

Brian Kloppenborg – Executive Director
American Association of Variable Star Observers (AAVSO)

What AAVSO can do for you

Photometric data collection

- Visual
 - Covers 0 - 16th mag
- Johnson-Cousins UBVRI
 - Photoelectric from -1 to +8
 - CCD / CMOS from 5 to 19 mag
- Sloan ugriz
 - CCD/CMOS from 5 to 19
- MKO-like JH
 - Photoelectric from -4 to +4 mag

Spectroscopic data collection

- $R < 200$
 - V limit of 10-14 mag
- $600 < R < 5000$
 - V limit of 10-12th mag
- $10,000 < R < 30,000$
 - V limit ~8th mag

Data mining through the Variable Star Index (VSX)

- Metadata on more than 10.2M variable stars

See details at <https://www.aavso.org/observing-campaigns>



Acquired data in support of CHARA 2024B programs

PI	Photometry		Spectroscopy		Note
	Objects	Total Obs	Objects	Total Obs	
Jonak	4	830	11	188	Counting R > 5,000 spectra only
Anugu	2	1,901	1	10	VY Cma, mu Cep
Norris	1	340,431	1	411	T CrB
Monnier	75	2,250	N/A	N/A	Non-variable stars
Richardson	1	1,886	1	152	WR 140
Total	83	347,298	14	761	



How to request AAVSO observing time

From the CHARA (internal) proposal form

- Check the box!

If you get CHARA time, we'll reach out to you!

Observing Campaign Manager
Elizabeth Waagen
eowaagen@aavso.org

Request for Observing Time at the CHARA Array
For the Period
August 1 – December 21, 2023
Type only within boxed areas immediately after hyphens

P.I. Name/e-mail -	PhD Research? – yes/no (circle choice)
Co-P.I. Names -	
Observing Participants -	AAVSO data? – yes/no (circle choice)
Proposal Title –	
Is this a new or continuing project? – new / continuing (circle choice)	
Abstract -	

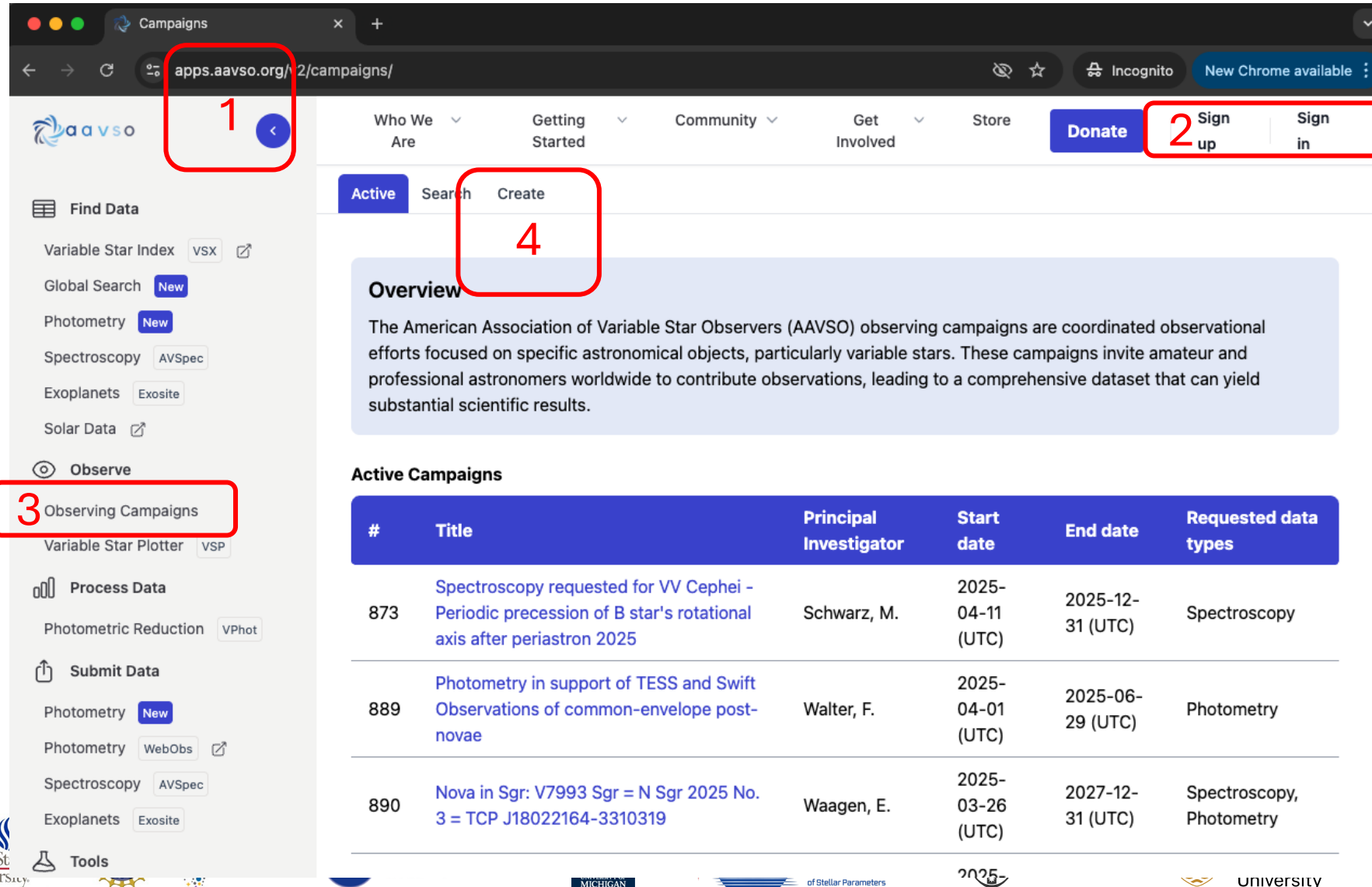
Summary of Requested Observing Run(s)

Run	No. of Nights	Optimal Dates	Acceptable Dates	Beam Combiner	Filter / Spectral Mode	Telescopes
1						
2						
3						

Unacceptable Observing Dates (for non-astronomical reasons) -

1
2023B – Submission Deadline: 2023 March 31, midnight EDT – Submit to proposals@chara-array.org

If you didn't get time, we're still happy to collaborate



The screenshot shows the AAVSO website with the following annotations:

- 1**: Points to the URL `apps.aavso.org/2/campaigns/` in the browser address bar.
- 2**: Points to the **Sign up** button in the top right navigation bar.
- 3**: Points to the **Observing Campaigns** link in the left sidebar under the **Observe** section.
- 4**: Points to the **Create** button in the top navigation bar.

The main content area displays an **Overview** section and a table of **Active Campaigns**.

Overview

The American Association of Variable Star Observers (AAVSO) observing campaigns are coordinated observational efforts focused on specific astronomical objects, particularly variable stars. These campaigns invite amateur and professional astronomers worldwide to contribute observations, leading to a comprehensive dataset that can yield substantial scientific results.

Active Campaigns

#	Title	Principal Investigator	Start date	End date	Requested data types
873	Spectroscopy requested for VV Cephei - Periodic precession of B star's rotational axis after periastron 2025	Schwarz, M.	2025-04-11 (UTC)	2025-12-31 (UTC)	Spectroscopy
889	Photometry in support of TESS and Swift Observations of common-envelope post-novae	Walter, F.	2025-04-01 (UTC)	2025-06-29 (UTC)	Photometry
890	Nova in Sgr: V7993 Sgr = N Sgr 2025 No. 3 = TCP J18022164-3310319	Waagen, E.	2025-03-26 (UTC)	2027-12-31 (UTC)	Spectroscopy, Photometry



CHARA Code of Conduct

- Draft version available at:
 - www.chara.gsu.edu/chara-code-of-conduct
- **Feedback appreciated!**
 - gschaefer@gsu.edu



Code of Conduct for the CHARA Consortium

Principles

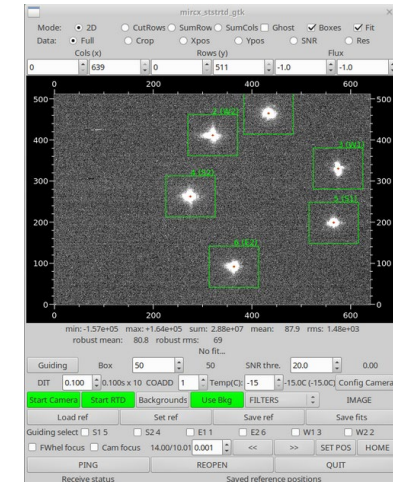
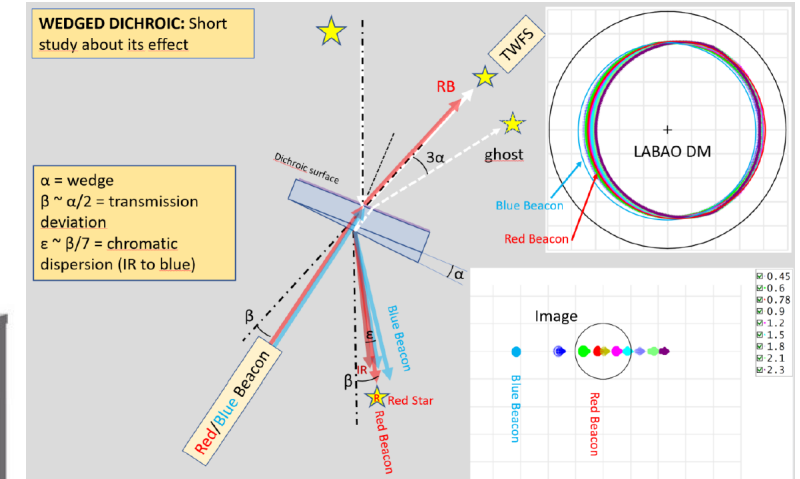
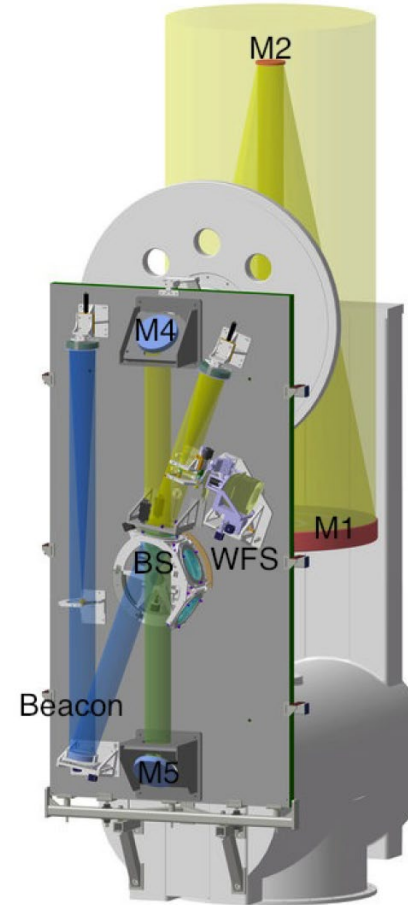
The CHARA Consortium is committed to providing a safe and respectful work environment, free of any form of harassment. The CHARA Consortium welcomes and respects all Consortium members, regardless of race, ethnic origin, nationality, religious beliefs, gender, gender identity, sexual orientation, disability status, age, body size, family status, socio-economic status, or cultural background.

The success of CHARA, its participants, and members relies on vigorous scientific and technical discourse within a framework of respect for all participants, including scientists, engineers, support staff at the Array, contractors working with CHARA, and prospective external collaborators and members. Interactions among CHARA participants occur in many different contexts, including observing (in-person or remotely), annual science meetings, virtual meetings, email exchanges on or off the CHARA email lists, in-person exchanges, and discussions on electronic channels (discord, slack, etc). This Code of Conduct states the Consortium's expectation of respect and appropriate behavior in all of these interactions and outlines courses of action when this expectation is violated.

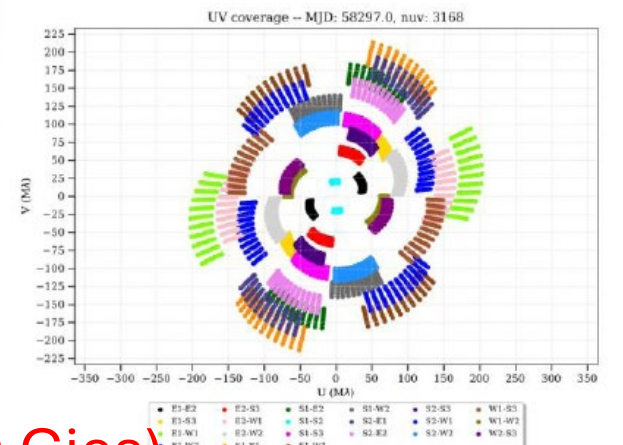
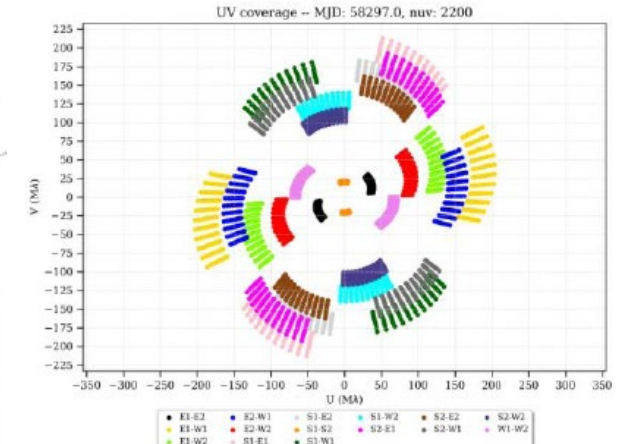
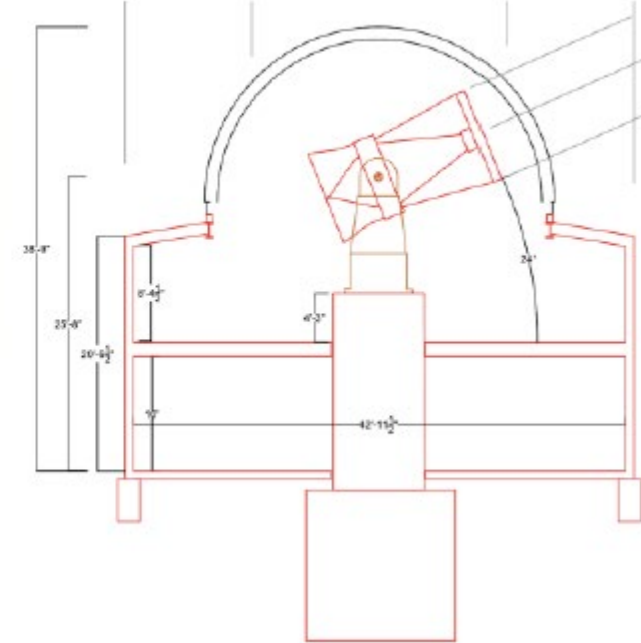
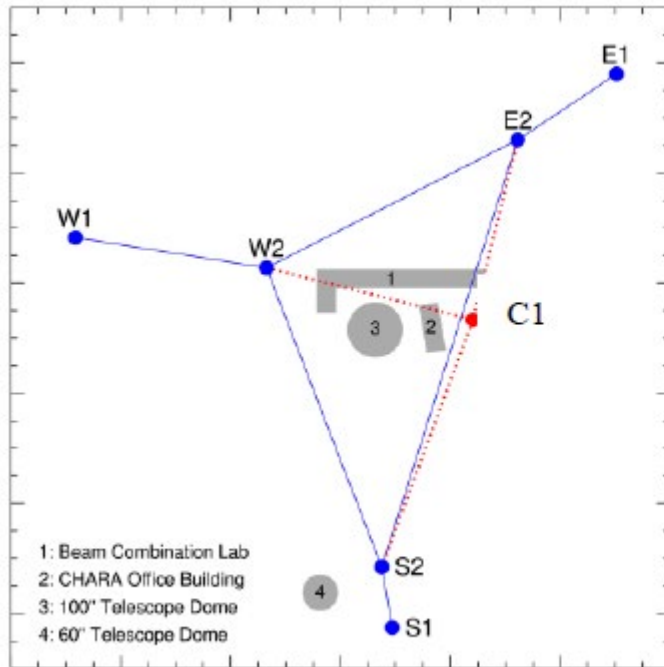
The CHARA Consortium will not tolerate harassment, bullying, or persistent unwelcome behavior of one individual or group against another. The Consortium aims to nurture the careers of junior scientists and protect their stature and scientific freedom within the Consortium. We expect the CHARA community to follow the [Code of Ethics adopted by the American Astronomical Society](#), the [Code of Conduct adopted by the International Astronomical Union](#), and the [NOIRLab Code of Conduct](#) for time awarded through the CHARA open access program.

Multi-Spectral Band Advances

- Submitted – NSF MRI Track 1 (PI Schaefer)
- Upgrade the dichroic beam splitters in AO systems at telescopes
 - Minimize dispersion between visible and IR light transported to lab
- Upgrade detector in the Six Telescope Star Tracker (C-RED One)
 - Extend recent improvements in alignment stability to fainter targets



Central 2-Meter Telescope



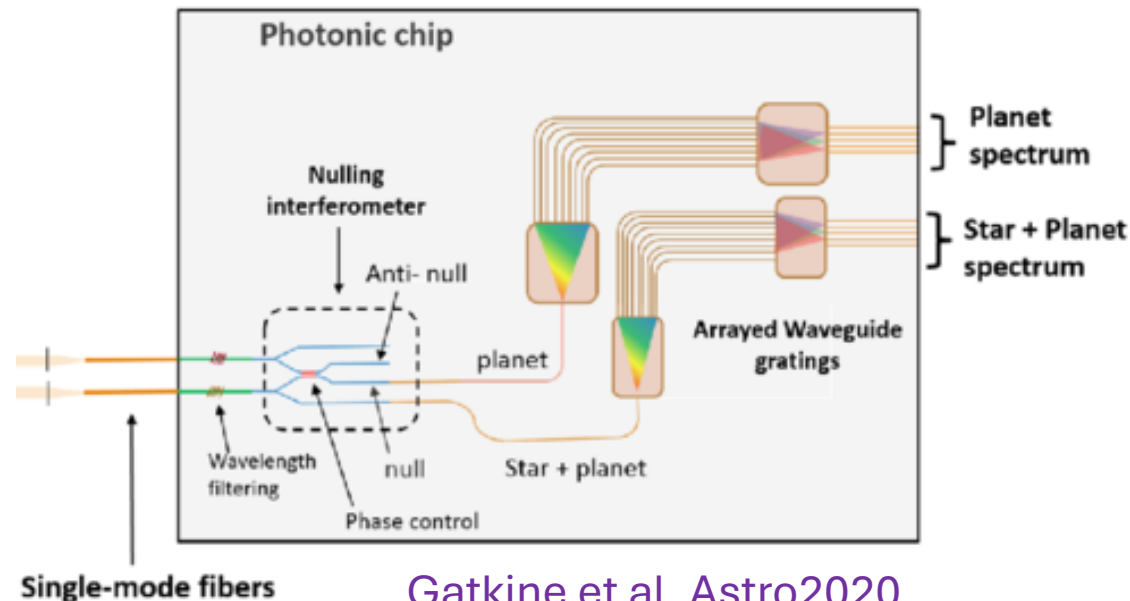
- Baseline Bootstrapping for Imaging
- Improve uv Coverage and Improve Sensitivity
- Prelim. Prop: NSF – Mid-Scale Research Infrastructure (MSRI-1; Gies)

Possible Upgrades in the Future

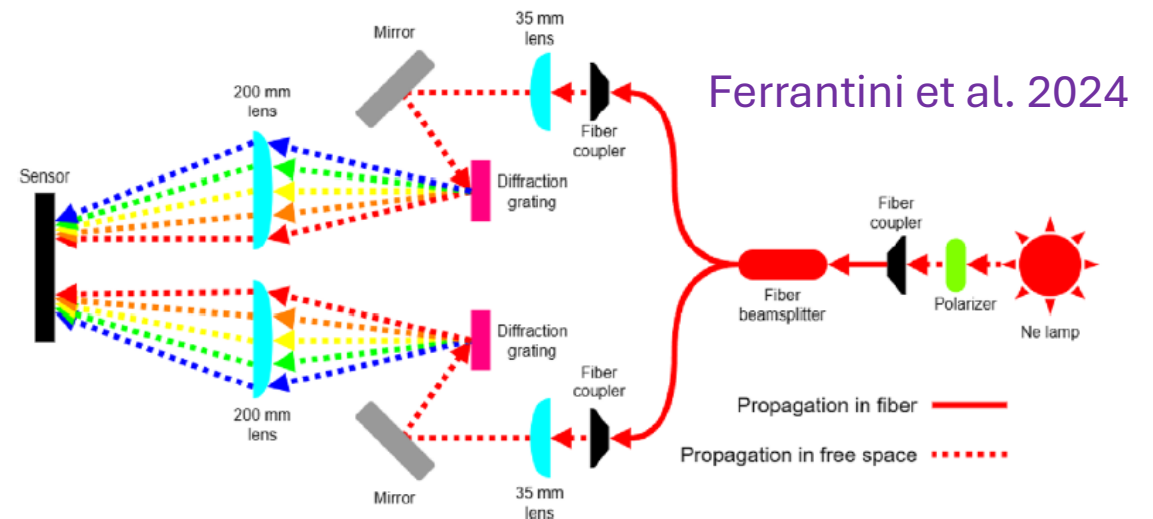
- Dual star mode (Narsi's talk)
- Silmaril sensitivity improvements (Cyprien's talk)
- Optimizing AO for performance at visible wavelengths
 - Redesign telescope AO bench (smaller off-the-shelf DM)
 - Redesign labAO system – offload TT/aberrations to telAO
- CMAP – 1 km baseline (Channel 13 site)
 - Improve resolution
- Central 2-meter + upgrade existing telescopes to 2m
 - Improve sensitivity
 - Improve uv coverage

CHARA Array as a Testbed for Testing New Technologies - Potential Collaborations

- CHARIOT (Kevin Barjot's talk)
- UCLA – Pradip Gatkine
 - Nulling on photonic chip



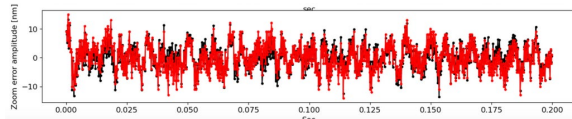
- Brookhaven National Lab – Paul Stankus
 - Multifrequency intensity interferometry demonstration using SPAD fast spectrometer



Much thanks to CHARA staff and colleagues for their patience this last year as we started a new journey in being parents.



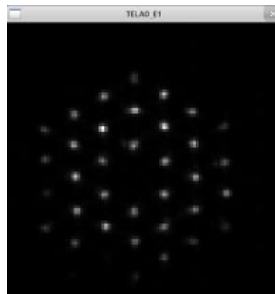
Engineering Updates from the Mountain



Fixed metrology
timestamp glitch
Narsi, **Nils**, Brad Hines



CMAP telescope
installation, AOB
development, and
fiber testing
Rob, Rainer, CMAP team



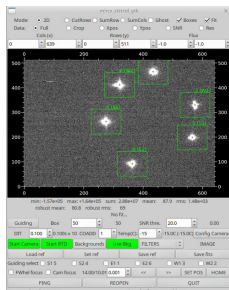
Implementation of new
unified AO software for
telAO + labAO + obsgtk
Theo, **Karolina**, Rob,
Rainer, Narsi



New generator and
automatic transfer
switch
Chris, JT, Craig



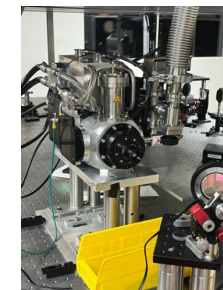
Data archive
expansion
Jeremy



Star tracking with STST,
SPICA FTT, Strider
Narsi, Denis, Theo



Telescope drives,
cylinders, stairs
Nic, Craig, Victor



Silmaril Commissioning
Cyprien, Narsi, Silmaril
team