Eight Years of CHARA/NOAO Community Access

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(for NOAO and CHARA)

NOAO web site: sub-section of factilities list

Other open-access facilities:

These facilities provide (or will provide) some access to the entire community. In those cases where that access is part of TSIP or the ReSTAR program, the time is available through the NOAO time allocation process.

- CHARA – The Center for High Angular Resolution Astronomy is an interferometric array of six 1-meter telescopes on Mount Wilson in southern California.
- Hale – The 5m Hale telescope is located at Palomar Observatory in southern California. Through a partnership agreement funded as part of the ReSTAR program, the community has had access to approximately 10 nights per semester through NOAO.
- IRTF – The NASA Infrared Telescope Facility is a 3.0 meter telescope optimized for infrared observations, and located at the summit of Mauna Kea, on the Big Island of Hawai'i.
- Keck – The two 10m Keck telescopes are located on Mauna Kea, on the Big Island of Hawai'i. As a result of TSIP awards and the Gemini-Keck I/HIRES exchange, the community has had access to a small number of nights through NOAO.
- LBT – The Large Binocular Telescope is a telescope on Mount Graham in southern Arizona consisting of two 8.4m mirrors on a common mount. As a result of TSIP awards, the community will have access to a small number of nights through NOAO.
- Magellan – The two 6.5m Magellan telescopes sit atop Cerro Las Campanas in Chile. As a result of TSIP awards, the community has had access to a small number of nights through NOAO.
- MMT – The 6.5m MMT is located on Mount Hopkins, in southern Arizona. As a result of TSIP awards, the community has had access to a small number of nights through NOAO.
- Subaru – The 8.2m Subaru Telescope is located on Mauna Kea, on the Big Island of Hawai'i. As a result of the Gemini-Subaru exchange program, the community has access to a small number of nights through NOAO.

NOAO website: CHARA oveview and links

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- CHARA Website

- CHARA Array
- Instruments
- CHARA Community Access
- NOAO Proposal Information
- Schedules
- Observing Preparation
- Weather/Sky conditions
- Publications
- Map & Directions
- People

Time Available

In order to increase community awareness and support of optical interferometry, CHARA has offered nights for open-access through NOAO. The current count/status of open-access nights is shown in the following table.

2007B	2008A	2008B	2009A
-	-	-	-
2009B	2010A	2010B	2011A
-	5	-	5
2011B	2012A	2012B	2013A
	5		5
2013B	2014A	2014B	2015A
	5		5
2015B	2016A	2016B	TOTAL
	5		35

Center for High Angular Resolution Astronomy

The CHARA Array is located on Mount Wilson in the San Gabriel Mountains of Southern California. The Array utilizes the principles of optical and infrared interferometry to link its six 1-meter telescopes together to produce resolution equivalent to that of a single telescope more than 300 meters in diameter, making it the highest angular resolution optical telescope in the world. A complement of beam combiners offers interferometric capability in the range 0.5 to 2.5 microns. Multibeam combiners (up to six telescopes) support interferometric imaging.

Last updated or reviewed March 2, 2011.

NOAO website: CHARA info for proposers

National Optical Astronomy Observatory

Community Access to the CHARA Interferometer on Mt. Wilson

Announcement from the NOAO newsletter

NOAO and Georgia State University are announcing an opportunity for observations with the Center for High Angular Resolution Astronomy (CHARA) Array at Mt. Wilson Observatory. About 50 hours will be available during calendar year 2016. Observations will be carried out by CHARA staff.

Requests should be submitted using the standard NOAO proposal form by selecting "CHARA" in the telescope list, and with "nights requested" as a decimal assuming 10 hrs/night (e.g. 1.6 nights = 16 hours). Proposals must be submitted by the standard 2016A deadline of Sep 30 2015. Note that this call covers all of calendar year 2016, as opposed to the six-month period of Feb-Jul 2016 for other resources in the 2016A proposal cycle.

What is the purpose of this call for proposals?

ReSTAR and ALTAIR reports have identified community interest in optical interferometry. Foreseeing increasing community access to the CHARA Array in the future, GSU would like to gain experience with visitor access to its Mt Wilson facility. NOAO would like to learn about reviewing interferometry proposals and allocating time on an optical array. This is intended to be an introductory opportunity, and previous experience with interferometry is not required.

CHARA capabilities and proposal preparation

The best way to study the capability of the instruments is to look over some of the science papers from the array. A bibliography of CHARA Array science is available: http://www.chara.gsu.edu/techreport.php

The following table gives a high level view of the performance for the system and the most mature beam combiners in 2016. Please note that CHARA does not have offset tracking capability, and the science target must satisfy acquisition, tilt tracking, and beam combiner magnitude limits. CHARA has additional capabilities in various stages of commissioning - these will be made available where possible for approved programs.

Mode	Telescopes	Band	Typical limit Mag=	Best performance Mag=	At Spectral Resolution R=
Acquisition	2	V-R	10.0	12.0	Broad band
Tilt tracking	2	V-R	10.0	12.0	Broad band
CLASSIC	2	H or K band	7.0	8.5	Broad band
CLIMB	3	H or K band	6.0	7.0	Broad band
VEGA (hi-res)	2 or 3	2 bands of 7nm (separation 30nm) in 480-850nm	4.0	5.0	30000
VEGA (med-res)	2 or 3	2 bands of 35nm (separation 160nm) in 480-850nm	6.5	7.5	6000
MIRC	6	H (K)	4.5 (3.0)	5.5 (4.0)	40
PAVO	2	630-900 nm	7.0	8.0	30

Steve Ridgway (ridgway@noao.edu) is the NOAO point of contact for proposal preparation, and he can steer you to more expert advice as needed.

The 6 CHARA telescopes provide 15 baselines, listed here. Normally a two telescope combiner can be used with any two telescopes (one baseline), a 3-telescope combiner with any 3 telescopes (3 baselines), etc. The selection of telescopes can be changed during the night, within some limitations, provided it is part of the observing request and plan - please inquire for more specific information.

If you decide to prepare a proposal, you will probably want to look at the optical interferometry planning tools supported by the NASA Exoplanet Science Institute at http://nexsciweb.ipac.caltech.edu/gcWeb/gcWeb.jsp

The Jean-Marie Mariotti Center in Grenoble offers an interferometry planning tool Aspro which supports CHARA instruments. The JMMC also offers SearchCal, for selecting calibrator stars.

There are no reserved targets or science, though proposers may optionally be put in contact with groups pursuing similar programs. NOAO policy on data proprietary period will apply.

How much time is needed for an observation?

A single "snapshop", including calibrators, requires ~30-90 minutes. This may produce between one and several dozen UV points, depending on the instrument. This amount of data can determine, for example, an angular diameter, a limb darkening strength, a binary separation, or the fraction of emission in a shell.

This may not be well suited for survey programs, for time variable studies, or for imaging of complex sources, which typically might require larger observing allocations.

The observations

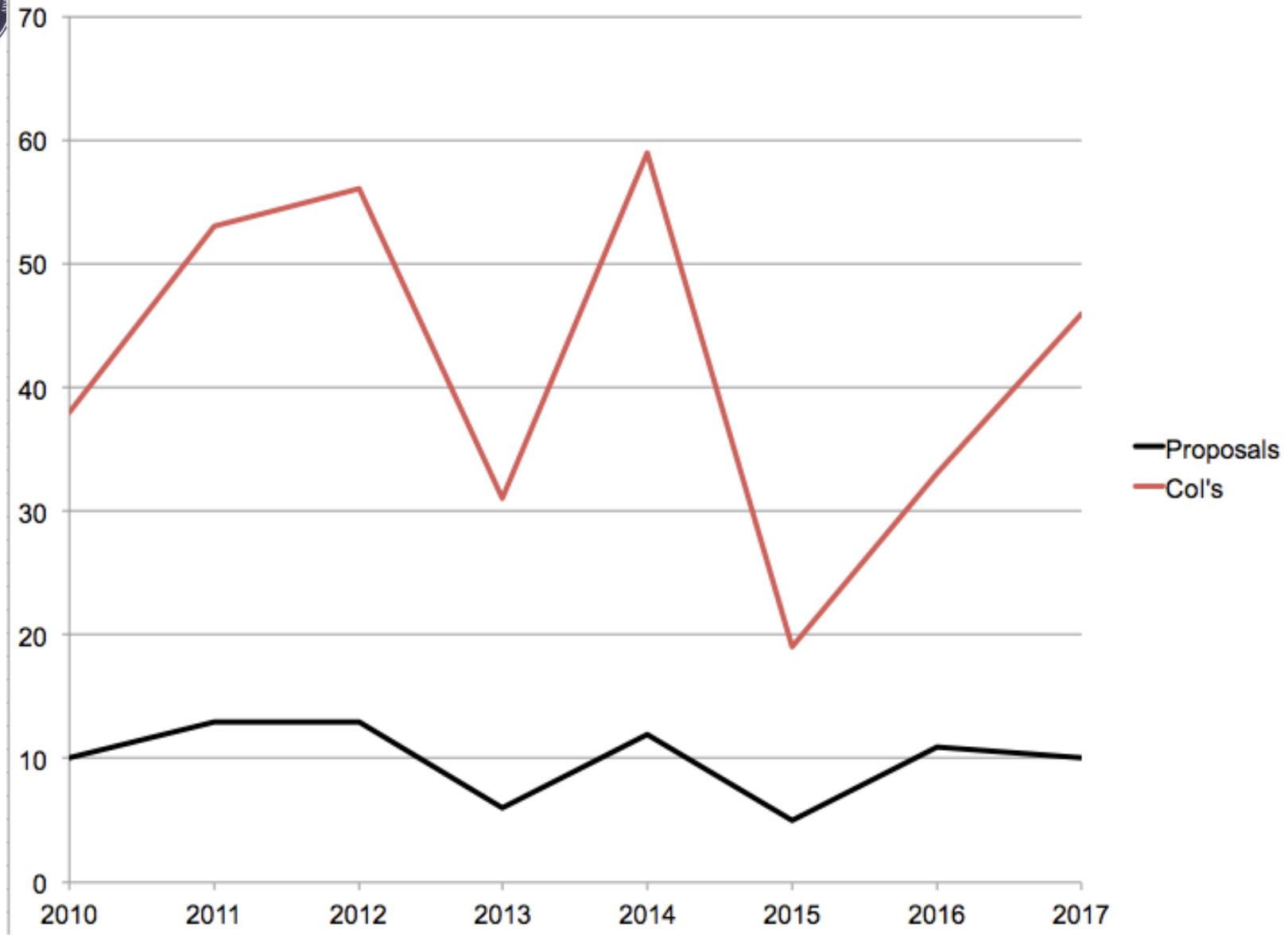
CHARA cannot guarantee productive observations, but is prepared to devote more telescope time than the allocated total in order to increase the odds of success.

All observing will be done by CHARA consortium staff. Visitors are welcome to travel to the Array - however, observation dates may not adhere to an advance schedule.

Data reduction and analysis

Consortium members will also support data reduction to Optical Interferometry FITS format, though users will probably find it interesting and not difficult to run the reduction suites, either on a CHARA computer, or on their own Linux or Mac systems. Visibility modeling tools are available from the Exoplanet Science Institute at http://nexsciweb.ipac.caltech.edu/vmt/vmtWeb/, and from the Jean-Marie Mariotti Center at http://www.jmmc.fr/litpro_page.htm.

A very complete bibliography of interferometry science is available at the OLBIN website, http://jmmc.fr/bibdb/ , and may be the best guide for conventional ways to interpret data. However, optical interferometry is a young field and is wide open for new approaches.


70
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
2015
2016
2017
Proposals
Col's

In the recent proposal to NSF for support of increased community access, we were were able to write:

- In 7 years, the NOAO TAC received 69 proposals to use CHARA
- 141 distinct scientists
- Average over-subscription >4X

2017B NOAO Call for Propsals

Fifteen nights will be available during the 2017B observing semester (August - December;

CHARA will be closed for the month of January 2018).

- 2017A over-subscription 4X

CHARA consortium participation in proposals to NOAO TAC

- "Members of the CHARA collaboration may participate as collaborators on NOAO proposals and be listed as such in the text of proposals (but not as P.I. or Co-I. on the cover sheet).”