NRAO eNews

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[(https://science.nrao.edu/opportunities/vla-image-contest)](https://science.nrao.edu/opportunities/vla-image-contest)

Upcoming Events

ngVLA Summer Short Talks (https://ngvla.nrao.edu/page/2020sts)
Thursdays, 3:00pm EDT, Jun 25, 2020 - Sep 10, 2020 | Virtual

VLA Image Contest Deadline (https://science.nrao.edu/opportunities/vla-image-contest)
Sep 18, 2020 | Online Contest

NRAO/GBO Status

Tony Beasley (NRAO Director, AUI Vice President for Radio Astronomy)

We continue our return to full operations. The North American NRAO/GBO instruments are operational, with IT systems performing well. ALMA has begun regular reviews to consider restarting operations – the answer so far is "not yet", but the "yes" day is approaching.

In our key states (New Mexico, West Virginia, Virginia), the number of new COVID infections seems to have passed through a second peak, and is starting to flatten again. Some parts of the U.S. are still experiencing major outbreaks, and travel restrictions (e.g. 14 -day quarantines for persons entering New Mexico) remain in place.

All NRAO/GBO activities are following our guidelines and protocols. The new polices requiring face coverings, contact tracing, and health checks have made us rethink how we work to meet our goals for delivering science. I want to express appreciation to everyone who has stepped up in making our facilities as safe as possible through the pandemic surges. I am proud of our responses and our ability to adapt to these changes. Unfortunately, as mentioned above, the COVID virus does not appear to be greatly reducing in intensity, and the path to a viable vaccine is unclear. I understand there is a growing "COVID fatigue," but we remain vigilant and respect the safety requirements. We cannot and will not relax our protocols until there is a lasting positive change in the COVID environment.

Our plan was to transition to "Phase 2" operations in early September. At this point, I am going to push back evaluation of this change to 1 December. Nevertheless, the Observatories are doing well in trying times, with great support from the National Science Foundation and Associated Universities, Inc.

ngVLA Project News

Eric Murphy

ngVLA Summer Short Talk Series

The NRAO and the Next Generation Very Large Array (ngVLA) Science Advisory Council will continue the online ngVLA Summer Short Talk Series (https://ngvla.nrao.edu/page/2020sts), Thursdays at 3 p.m. Eastern Daylight Time through 10 September. Each 20 to 25-minute talk highlights open science questions and their connection to present and future observing facilities at all wavelengths. A moderated, 20-minute, audience Q&A session accompanies each talk. The talk schedule and information regarding registration and attendance is online.

ngVLA Related White Papers

The community submitted 93 white papers related to the ngVLA in response to recent calls from the U.S. National Academies on the Planetary Science and Astrobiology Decadal Survey 2023-2032 (https://www.nationalacademies.org/our-work/planetary-science-and-astrobiology-decadal-survey-2023-2032), on the Decadal Survey on Astronomy and Astrophysics 2020 (https://www.nationalacademies.org/our-work/decadal-survey-on-astronomy-and-astrophysics-2020-astro2020), and on Exoplanet Science Strategy (https://www.nationalacademies.org/our-work/exoplanet-science-strategy). The papers' titles, principal authors, and pdfs can be conveniently viewed online (https://ngvla.nrao.edu/page/ngvla-wps).

New Views of Galaxy Formation and Evolution

The NRAO will convene a Special Session at the January 2021 American Astronomical Society (AAS) meeting titled *New Views of Galaxy Formation and Evolution* (exact date/time TBD). Sensitive ground- and space-based astronomical facilities are currently pushing the detection of galaxies well into the Epoch of Reionization (EoR), less than 1 Gyr after the Big Bang. Such observations are allowing us to begin piecing together a picture for how and when the first galaxies formed, along with the physical processes driving their evolution into the mature systems that we observe in the local Universe.

While existing facilities are making transformative discoveries by pushing their capabilities to the limit of what can be detected at the earliest times, sample sizes remain small as detections of individual systems are limited to the most luminous sources or those whose detections are afforded by strong lensing. Informed by these pioneering efforts, suites of next-generation ground- and space-based facilities will marshal a new combination of large area, deep multi-wavelength surveys that will jointly characterize the accretion, star formation, molecular gas, and stellar mass histories for large populations of galaxies back into the EoR and beyond. When combined with a detailed accounting of the kinematics, chemical abundances, and energetic processes associated with these systems, such studies will ultimately provide a self-consistent framework that will revolutionize the field of galaxy evolution, leading to a much-improved theoretical understanding of the fundamental physics driving the formation and evolution of galaxies over cosmic time.

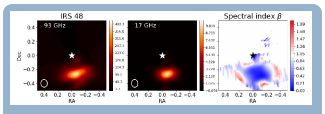
This Special Session will highlight recent scientific breakthroughs in galaxy evolution enabled by current investigations using large optical/IR, (sub-)millimeter, and radio facilities; describe planned near- and long-term improvements for ground- and space-based facilities; discuss major scientific leaps likely to result from next-generation facilities across the electromagnetic spectrum; and review the highest-priority themes in the field of galaxy evolution that will be accomplished by the state-of-the-art observatories that will be commissioned in the next decade. This Special Session will feature a session of invited oral presentations and an associated poster session with contributed presentations.

Confirmed speakers include: Mark Dickinson (NOIRLab), Linda Tacconi (Max Planck Institute for Extraterrestrial Physics), Justin Spilker (University of Texas), Xiaohui Fan (University of Arizona), Chris Willott (Herzberg Astrophysics), and Rachel Sommerville (Flatiron Institute).

We encourage you to consider contributing to the associated poster session. When submitting a contributed poster abstract to the AAS, you will have the option of requesting that your presentation be included in this Special Session.

The First Steps in Planet Formation via ngVLA Observations

Nienke van der Marel (University of Victoria)



Simulated ngVLA observations of Oph IRS 48 at 93 GHz and 17 GHz yield spatially-resolved spectral indices (van der Marel et al. 2018).

Dust growth through collisions and coagulations of small dust grains is considered the first step of the planet formation process. Planets are thought to form in protoplanetary disks around young stars, but dust growth is hindered in these disks through gas-dust drag forces, as dust drifts inwards faster than it can grow to sufficiently large sizes. Dust "traps" in pressure bumps in the outer part of the disk had been proposed by dust evolution theory for decades as a solution for this problem (Weidenschilling et al. 1977 (https://ui.adsabs.harvard.edu/abs/1977MNRAS.180...57W/abstract) , Birnstiel et al. 2010 (https://ui.adsabs.harvard.edu/abs/2010A%26A...513A..79B/abstract) , Pinilla et al. 2012 (https://ui.adsabs.harvard.edu/abs/2012A%26A...538A.114P/abstract)).

The Atacama Large Millimeter/submillimeter Array (ALMA) revealed the first observational evidence for these dust traps, though dust and gas images of the Oph IRS 48 disk: the millimeter-sized dust grains were concentrated on one side of the disk in a crescent shape, whereas the gas and the smaller, micron-sized dust grains were present throughout the disk (van der Marel et al. 2013 (https://ui.adsabs.harvard.edu/abs/2013Sci...340.1199V/abstract)). This segregation between large and small grains/gas is a clear indicator of dust trapping, and similar structures have been seen in many other protoplanetary disks ever since (e.g. Pinilla et al. 2015 (https://ui.adsabs.harvard.edu/abs/2015A%26A...584A..16P/abstract) , van der Marel et al. 2016 (https://ui.adsabs.harvard.edu/abs/2016A%26A...585A..58V/abstract) , Dong et al. 2017 (https://ui.adsabs.harvard.edu/abs/2017ApJ...836..201D/abstract) , Villenave et al. 2019 (https://ui.adsabs.harvard.edu/abs/2019A%26A...624A...7V/abstract)). However, due to the high optical depth at millimeter wavelengths it remains challenging to analyze the dust size distributions in detail.

At centimeter wavelengths, the emission is no longer optically thick and even larger dust grains are being traced. Whereas the spatial resolution of the Very Large Array (VLA) is still somewhat limited, the next generation Very Large Array (ngVLA) will allow us to image dust traps at high angular resolution, similar to the resolution of the longest ALMA baselines, and reveal the distribution of the large centimeter grains. Using the combined ALMA and ngVLA data, it will be possible to derive spatially resolved spectral indices and fully unravel the dust growth rates and processes inside these dust traps, which are crucial for our understanding of the early steps of planet formation (see figure).

This article continues a regular feature intended to highlight contributions to the ngVLA Science Book (https://ngvla.nrao.edu/page/scibook) . We are especially interested in showcasing work done by early-career researchers. Anyone wishing to volunteer to author a feature should contact Joan Wrobel (mailto:jwrobel@nrao.edu?subject=ngVLA%20science%20in%20eNews) .

ALMA Ambassadors Postdoctoral Program

George Privon

2020 ALMA Ambassadors during their February training at NRAO headquarters in Charlottesville.

The North American ALMA Science Center (NAASC) is accepting applications for the ALMA Ambassadors Postdoctoral Program. The program provides training and up to a $10,000 USD research grant (other forms of payment are available, see below) to postdoctoral researchers interested in expanding their ALMA/radio interferometry expertise and sharing that knowledge with their home (or other) institutions through the organization of ALMA Cycle 8 proposal preparation workshops, and by serving as the local ALMA expert to colleagues up until the proposal deadline.

The NAASC will host selected postdocs at the National Radio Astronomy Observatory headquarters in Charlottesville, Virginia the week of 15 February 2021 to receive in-depth training. Training will include topics related to ALMA proposal writing, including: interferometry basics, ALMA science capabilities, recent ALMA headlines, use of the ALMA Observing Tool, and guidance for speaking on these topics. The training also includes a poster session where ALMA Ambassadors are expected to showcase their own science to their fellow ambassadors and the local astronomical community, including NRAO staff. The selected postdocs must host a proposal preparation workshop (at their home institution or an alternate location) in advance of the Cycle 8 ALMA proposal deadline in April 2021. These workshops are similar to an abbreviated version of Community Day and *NRAO Live!* events from previous observing cycles. ALMA Ambassadors will also make themselves available to help their local community between the call for proposals and the deadline.

The NAASC will provide travel support for the training as well as all talk materials, supplies, and infrastructure for the workshops hosted by the ALMA Ambassadors. Up to a $10,000 monetary grant is offered in support of the selected postdocs' independent research programs. If the awardee is not able to receive the monetary grant, the NAASC can offer up to $10,000 in science travel reimbursement (must be used within 12 months of training) or up to $10,000 for the host institution to support students or summer researchers. Postdocs with some radio or submillimeter interferometry experience are preferred. Postdocs must be based at a North American institution. If you do not meet these requirements but are interested in learning more about the training we are offering, please contact George Privon (mailto:gprivon@nrao.edu?subject=ALMA%20Ambassadors) to discuss possible opportunities. Although not required, we will consider multiple applicants from the same institution or region.

The deadline to apply is 23 October 2020. For more information, please visit the ALMA Ambassadors website (https://science.nrao.edu/facilities/alma/ambassadors-program/) .

NAASC Conference and Workshop Support

Loreto Barcos-Muñoz

The **North American ALMA Science Center** (NAASC) invites scientists from North American institutions (U.S. and Canada) to apply for funding in support of upcoming conferences and workshops, including virtual events. There is no restriction on the size of the meeting, and any wavelength and/or topic are welcome. Priority will be given to events that promote diversity and inclusion in the community, and encourage participation of students, postdocs, and early career researchers. The NAASC will also be able to provide logistical support (e.g., webinar platform, setting up the website event, handling registration, etc.), if needed.

Due to COVID-19, NRAO is not hosting face-to-face meetings, and cannot be considered as a hosting venue, until further notice. We highly encourage applications for virtual meetings, and proposals on how to best use the NAASC funding in such cases.

Applications can be submitted anytime by simply emailing the NAASC (naascrec@nrao.edu) (mailto:naascrec@nrao.edu) with details of the conference, and requested funding and/or logistical support, if needed. Decisions will be announced up to 4-6 weeks of submission.

For more information about this program, please visit the NAASC Conference and Workshop Support website (https://science.nrao.edu/facilities/alma/NAASC-Conference-and-Workshop-Support).

ALMA Program News

Al Wootten

Wind & snow are an almost permanent part of the landscape at the ALMA Operations Site; all of our antennas are now protected.

ALMA Operations Status

ALMA remains in Caretaker mode, with a small team in place during pandemic shutdowns. Reviews of the situation are scheduled regularly as some ALMA partners experience improvements locally. Offices in Chile remain in Caretaker status. Even though ALMA is technically located in the Tropics, at its altitude winter temperatures rarely rise above freezing until spring. Windblown snow can become ice, presenting a danger to mechanical components, particularly the ALMA antennas. All antennas have been sealed to prevent this from occurring.

ALMA North American Development Studies Cycle 8 / FY2021

Cycle 8 ALMA Development Studies are reviewed, nominated, and submitted for approval by NRAO and the U.S. National Science Foundation. Four proposals were received in response to the North American ALMA Development Studies Call for Cycle 8 to begin in Fiscal Year 2021. These proposals were reviewed by a panel of seven Study reviewers. The proposals were well-received by reviewers, fit within the budget, and address the strategic goals of North American ALMA Development and the ALMA2030 goals very well. The rankings of the proposals from the review suggested all proposals receive funding consideration. The four most highly-ranked proposals involve ten investigators at four institutions. The set was comprised of two hardware studies and two software studies. Four studies are recommended for funding, requesting a cumulative total of $857,421. In-kind funding provided by the proposing parties provides an additional $913,485. The four programs recommended for funding in Cycle 8 are summarized below.

Hardware-oriented Studies

Band 6v2 Receiver Development. This program is associated with the following program. Together they will advance a wide range of scientific studies by significantly reducing the time required for projects from imaging protoplanetary wakes in disks to blind redshift surveys, spectral scans, and deep continuum surveys.

Extending IF Bandwidth of the Existing Band 6 SIS Mixers to 12 GHz and 16 GHz with Optimal Noise Performance: An Experimental Demonstration. This program is tightly connected and complementary to the preceding program and promises increasing the bandwidth of ALMA 1.3mm receivers from the current 5 to 12 or 16GHz. This increase exceeds that called for by the ALMA Roadmap, which calls for broadening the receiver IF bandwidth by at least a factor two.

Technique-oriented Studies

These studies propose to develop imaging techniques for more accurate image production from incompletely sampled Fourier plane data using regularized maximum likelihood (RLM) techniques. These methods have been demonstrated to achieve higher angular resolution of continuum and spectral line sources while achieving superior image fidelity to traditional CLEAN-based techniques. In addition to benefitting ALMA imaging, these techniques may be expected to benefit Jansky VLA, VLBA and eventually ngVLA imaging.

Regularized Maximum Likelihood Techniques for ALMA Spectral Line Imaging. Developing and implementing methods for ALMA spectral line imaging, this Study focuses on achieving high image fidelity when utilizing multi-configuration spectral line and/or continuum aggregate datasets. As the ALMA archive continues to mature, techniques that can accurately image large and diverse quantities of data will drive science forward in key areas that require sensitivity and angular resolution, such as the kinematic detection of planets in protoplanetary disks and accurate astrochemical domain imaging in diverse sources.

Beyond Black Hole Images: Extending New Imaging Techniques including RLM from EHT to ALMA. Larger bandwidths and better receiver sensitivity will enable gains in speed and image quality on much longer baselines, enabling qualitatively new science, as demonstrated by the recent continuum imaging of the M87 Event Horizon.

NRAO & GBO Data Archive: Requesting An Extension of Proprietary Period

Dale A. Frail

Any principal investigators of Green Bank Telescope (GBT), Very Large Array (VLA), and Very Long Baseline Array (VLBA) observing projects who feel that their ability to work on their data has been negatively impacted by the current COVID-19 pandemic may request an extension to the usual proprietary period of up to three months. To do so, please submit a ticket to the "VLA/GBT/VLBA Archive and Data Retrieval" department of the NRAO Helpdesk (https://help.nrao.edu/) . This policy applies to all types of project.

Scientist Employment Opportunity

Join the NRAO proposal handling team, carry out independent research while assisting in the time allocation process, and help build the next generation proposal tools.

Starting this fall, the Science Ready Data Products (SRDP) program at the NRAO will begin development of a new generation of tools supporting the proposal, review, and time allocation process for the North American NRAO telescopes and Green Bank Observatory. We are now recruiting an Assistant Scientist for a three-year position to support the creation of the next generation of tools. Interested applicants can find additional information on the position and how to apply online (http://jobs.jobvite.com/nrao/job/oKi8cfw6) . For any questions or additional information about the position, please contact Dr. Jeffrey Kern (mailto:jkern@nrao.edu?subject=SRDP%20Scientist%20position) , SRDP Director.

Arizona Radio Observatory 2020B Call For Proposals

The Arizona Radio Observatory (ARO) solicits proposals for the 10-meter Submillimeter Telescope (SMT) located on Mount Graham, Arizona, for the period October 15, 2020 – February 15, 2021. No new proposals for

the ALMA Prototype 12-meter Telescope (12m) located on Kitt Peak, Arizona will be accepted for this current call as proposals from the 2020A call for proposals will be carried over to the 2020B proposal period. Proposal candidates should submit up to three pages of scientific and technical justification (including figures, tables, and references) in addition to their Proposal Summary Sheet (https://www.as.arizona.edu/sites/default/files/ARO_Proposal_Cover_Sheet.pdf) .

All proposal candidates are required to list on the Proposal Summary Sheet their requested observing blocks (the exact LST ranges to be scheduled and number of times to be repeated), dates on which they are not available to observe, and dates in which sources in those observing blocks are within the Sun-avoidance zone (45 degrees at the SMT, 10 degrees at the 12m).

The 10m SMT currently supports dual-polarization sideband-separating (SBS) observations at 1mm (211 – 280 GHz) and dual-polarization double sideband observations at 0.8mm (325 – 370 GHz). The SMT control system supports both dual-polarization ("2 IF mode") and dual-polarization + dual-sideband observations ("4 IF mode") with tunable IF from 4.5-7.5 GHz, for position-switched, beam-switched, and OTF observations. Proposal candidates should consult the ARO Equipment Summary and Status sheet (https://www.as.arizona.edu/arizona-radio-observatory) for additional technical specifications.

Remote observing is available. Observers who plan to observe remotely **must supply fixed IP address(es) of the computer(s)** that will be used during observing on their Proposal Summary Sheet. For further information about remote observing and other operational questions, please contact the ARO Software Engineer Natalie Gandilo (mailto:ngandilo@email.arizona.edu)

Proposals will be reviewed by the ARO TAC and scheduling of successful proposals will be done according to availability of the receivers requested. The telescopes are expected to be available to the general astronomical community for a minimum of 10 percent of the scheduled time. Institutions (or individuals) outside of the State of Arizona that wish to acquire longer commitments of time through a limited duration agreement with The University of Arizona should contact Buell Jannuzi, Director (mailto:buelljannuzi@email.arizona.edu) .

Next deadline for proposals is 23:59 MST on August 27, 2020.
Proposals should be emailed in PDF format to:
astro-aroproposals@list.arizona.edu

SMA Call for Standard Observing Proposals – 2020B Semester

Mark Gurwell (Submillimeter Array TAC Chair)

After an 11 week closure in response to the coronavirus pandemic, the Submillimeter Array restarted limited operations in June 2020, and continues to operate at a somewhat reduced schedule (5 nights out of 7). We anticipate that we will be able to maintain this cadence and hopefully expand it in the coming months, along with continued development and deployment of enhanced capabilities.

We now warmly welcome submission of proposals for the upcoming 2020B semester. In 2020B, the fraction of time available may be somewhat reduced, depending on safety protocols in place as a response to the coronavirus pandemic. We actively solicit projects of all sizes, and we are particularly interested in increasing the number of smaller proposals that take just a few hours in time, projects that are especially time critical (such as coordinated observing campaigns and ToO triggered event programs) and require data in the coming several months, and in monitoring type proposals.

Information on the array properties, where to go for further information, and how to propose, are provided below and we are available to answer questions or point you to any information you may need.

The latest Call for Standard Observing Proposals for observations with the Submillimeter Array (SMA) is for the 2020B semester with observing period 16 Nov 2020 – 15 May 2021.

Standard Observing Proposals

Submission deadline: 10 Sep 2020 20:00 UTC = 10 Sep 2020 16:00 EDT = 11 Sep 2020 04:00 CST (Taiwan)

Proposal Information and Submission (http://sma1.sma.hawaii.edu/proposing.html)

The SMA is a reconfigurable interferometric array of eight 6-m antennas on Maunakea jointly built and operated by the Smithsonian Astrophysical Observatory and the Academia Sinica Institute of Astronomy and Astrophysics. The array operates in the 230, 345 and 400 GHz bands, observing simultaneously with two orthogonally polarized receivers, one in the 230 GHz or 345 GHz band and the other in the 240 GHz or 400 GHz band (with full polarimetric observations available using the 230+240 or 345+400 band combinations).

The SMA configurations include antenna separations ranging between 9 m and 508 m. The small antennas allow access to low spatial frequencies (with projected baselines as short as 6-m) in the sub-compact configuration, and at the other extreme, the finest angular resolution with the very extended configuration at 345 GHz is ~ 0.25". The compact and extended configurations complete the range. The characteristics, performance and sky coverage of the SMA are both similar and complementary to those of the stand-alone Atacama Compact Array (ACA) component of ALMA, while providing full access to the northern sky.

The heart of the SMA backend is the SWARM correlator, now able to process up to 12 GHz bandwidth (IF coverage of 4 to 16 GHz) for each receiver in each sideband, for a total of 48 GHz bandwidth, at a uniform 140 kHz resolution. We are offering this new expanded coverage in 2020B as a shared-risk opportunity.

The SMA can tune the orthogonal receiver combinations independently, resulting in a very flexible frequency coverage capability. For example, observations can be made at 1.3 mm and 870 micron simultaneously (with many other configurations possible). One popular configuration allows the 12 GHz/sideband/receiver frequency coverage to cover up to 44 GHz contiguously (with 4 GHz covered with both receivers), where the tuning ranges overlap for the two orthogonally polarized receivers. Alternatively, the two receivers can be set with the same LO to cover the same 24 GHz (12 GHz in each sideband) of frequency space in the two orthogonal polarizations, allowing improved spectral line sensitivity. In such a case, full Stokes polarization measurements are also possible at 1.3 mm and 870 microns.

The SMA provides flexible, wide band frequency coverage that delivers high continuum sensitivity and excellent spectral line capabilities. A full transit observation with the 12 GHz/sideband/receiver correlator coverage will offer continuum sensitivity of 200 or 500 micro-Jy (1 sigma) at 230 or 345 GHz in good weather conditions (precipitable water vapor 2.5 mm and 1.0 mm, respectively). The corresponding line sensitivities at 1 km/s resolution are 35 and 80 mJy.

For more information about SMA capabilities, visit the SMA Observer Center website (http://sma1.sma.hawaii.edu/status.html) and explore the set of SMA proposing tools (http://sma1.sma.hawaii.edu/tools.html) . Current and archived SMA Newsletters

(https://www.cfa.harvard.edu/sma/Newsletters/) provide a sampling of the wide variety of science possible with the SMA.

For more details visit the SMA Observer Center Proposal Information Page (http://sma1.sma.hawaii.edu/proposing.html) .

IMPORTANT DATES FOR STANDARD OBSERVING PROPOSALS

- Submissions open: 13 Aug 2020
- Submissions close: 10 Sep 2020 20:00 UTC = 10 Sep 2020 16:00 EDT = 11 Sep 2020 04:00 CST (Taiwan)

Due to current and expected investment in further upgrades to the SMA capabilities, delays due to the coronavirus pandemic, as well as obligations to previous approved programs, the Large Scale Projects program (for projects requesting 100 to 1000 hours) will not be accepting proposals at this time for SAO. The ASIAA Key Projects program is accepting proposals for eligible investigators.

Questions or comments regarding the Standard Observing Proposals can be addressed to sma-propose@cfa.harvard.edu (mailto:sma-propose@cfa.harvard.edu) .

SOFIA Cycle 9 Calls for Proposals Released

Margaret Meixner (Director, SOFIA Science Mission Operations)

The Proposal Calls for SOFIA Cycle 9 observations have been released with a deadline of **September 4, 2020, 21:00 PDT** (September 5, 2020, 4:00 UTC). Detailed information about the Cycle 9 calls can be found on our website. (https://www.sofia.usra.edu/science/proposing-and-observing/proposal-calls/cycle-9)

Two Calls for Proposals are offered:

- A Call for regular programs (https://www.sofia.usra.edu/sites/default/files/Other/Documents/SOFIA_Cy9_CfP.pdf) , for which **approximately 500 hours of observations will be offered** and funding up to $4M is expected to be available for eligible proposers
- A Call for the SOFIA Legacy Program (https://www.sofia.usra.edu/sites/default/files/Other/Documents/SOFIA_Cy9_SLP_CfP.pdf) , which enables programs producing a rich archival dataset of significant scientific value to the astronomical community. Up to four legacy proposals will be accepted, with each allocated up to ~200 hours of observing time (~200 hours of observations per cycle in total). Funding is expected to be available at the level of $2M per year.

All six instruments -- EXES (https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-9/2-exes) , FIFI-LS (https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-9/3-fifi-ls) , FORCAST (https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-9/4-forcast) , FPI+ (https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-9/4-forcast) , GREAT (https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-9/6-great) , and HAWC+ (https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-9/7-hawc) -- will be available during the Cycle (July 1, 2021 to September 30, 2022). SOFIA plans to offer three Southern deployments: two long deployments (July-September 2021 and 2022) offering GREAT and HAWC+, and a short deployment in March 2022 offering FIFI-LS.

Proposals are to be submitted through the USPOT (https://dcs.arc.nasa.gov/observationPlanning/installUSPOT/uspotDownload.jsp) tool. The Help Desk is open to answer any question and inquiry from the community: sofia_help@sofia.usra.edu. (mailto:sofia_help@sofia.usra.edu)

Notice of Data Breach

Heather Cochrane

NRAO was recently informed of a data security incident that involved some recipients of subscription emails from the Observatory, such as eNews. The information involved was limited to publicly available data such as e-mail addresses and names. While we have been assured that the stolen data was destroyed, and that changes have been made to prevent a similar incident in the future, we are informing you of this matter so that you are aware of what happened and can remain vigilant in ensuring that there is no unusual activity regarding your identity online. We sincerely regret that this breach occurred. If you have questions, please contact Heather Cochrane (mailto:hcochran@nrao.edu?subject=NRAO%20Data%20Breach), NRAO Director of Advancement.

Recent Media Releases

The Cold Case of Carbon Monoxide (https://public.nrao.edu/news/the-cold-case-of-carbon-monoxide/)
19 August 2020

Featured Video: Measuring the Expanding Universe (https://public.nrao.edu/news/featured-video-measuring-the-expanding-universe/)
14 August 2020

VLBA Finds Planet Orbiting Small, Cool Star (https://public.nrao.edu/news/vlba-finds-planet/)
4 August 2020

ALMA Captures Stirred-Up Planet Factory (https://public.nrao.edu/news/alma-captures-stirred-up-planet-factory/)
3 August 2020

ALMA Finds Possible Sign of Neutron Star in Supernova 1987A (https://public.nrao.edu/news/alma-finds-possible-sign-of-neutron-star-in-supernova-1987a/)
30 July 2020

AAS Names NRAO Astronomer as Fred Kavli Plenary Lecturer (https://public.nrao.edu/news/nrao-astronomer-kavli-lecturer/)
28 July 2020

NRAO Image Contest Celebrates VLA 40th Anniversary (https://public.nrao.edu/news/vla-image-contest/)
27 July 2020

IMAGE RELEASE: Magnetic Field of a Spiral Galaxy (https://public.nrao.edu/news/image-galaxy-magnetic-field/)

21 July 2020

New Web Page for Historic Archives

Heather Cole & Ellen Bouton

We are pleased to announce a new NRAO/AUI Archives web interface (https://www.nrao.edu/archives/) for displaying our finding aids and searching our collection.

Over the past year and a half we have been building and testing Omeka, open source software that is particularly good at handling a variety of digital formats. All of our collections, whether NRAO institutional records or the personal papers of individuals, whether paper or digital (documents, photos, audio), are now in the software and searchable. There are currently more than 20,000 items loaded in our new database, including approximately 8,300 photos (up from 278 in the previous software!).

We hope you will find our new website easy to use; we welcome your feedback and encourage you to contact us directly if we can assist in your research. Use archivist@nrao.edu (mailto:archivist@nrao.edu) or the contact form on the new Web page.

From the Archives

Ellen Bouton

About this month's photo: On 7 August 2008, the Expanded Very Large Array (EVLA) took a giant step toward completion with successful testing of advanced digital hardware designed to combine signals from its upgraded radio-telescope antennas to produce high resolution images of celestial objects. Seated, front to back: Barry Clark, Ken Sowinski, Michael Rupen, Kevin Ryan. Standing, front to rear: Mark McKinnon, Rick Perley, Hichem Ben Frej. Photo by Dave Finley.

According to the press release, "By upgrading the 1970s-era electronics of its original Very Large Array (VLA), NRAO is creating a major new radio telescope that is ten times more sensitive than before. Using the EVLA, astronomers will observe fainter and more-distant objects than previously possible and use vastly improved analysis tools to decipher their physics. The heart of the new electronics that makes this transformation possible is a high-performance, special-purpose supercomputer, called the [Wideband Interferometric Digital Architecture] WIDAR Correlator. It has been designed and is being built by the National Research Council [NRC] of Canada at the Dominion Radio Astrophysical Observatory (DRAO) of the Herzberg Institute for Astrophysics, and serves as Canada's contribution to the EVLA project.

The design of the correlator incorporates an NRC-patented new digital electronic architecture. The successful test, at the VLA site 50 miles west of Socorro, New Mexico, used prototype correlator electronics to combine the signals from two upgraded VLA antennas to turn them into a single, high-resolution telescope system...."

From the Archives is an ongoing series illustrating NRAO and U.S. radio astronomy history via images selected from our collections of individuals' and institutional papers. If readers have images they believe would be of interest to the Archives, please contact Ellen Bouton (mailto:archivist@nrao.edu).

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