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Currents

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Two NOAO Workshops on Astronomical Big Data and Dark Energy Camera Science:

NOAO will be hosting two back-to-back workshops in Tucson during the week of March 9-13, 2015. The first, "Tools for Astronomical Big Data," on March 9-11, will bring together researchers to share their strategies and tactics for doing science with massive astronomical data sets. The second, "DECam Community Science Workshop," on March 11-13, will look at some of the first science being done with the Dark Energy Camera, and will explore the best paths for using it to produce high-impact surveys.

More detailed descriptions of both workshops are below, with further information and registration details available at the conference websites:

["Tools for Astronomical Big Data"](#)

["DECam Community Science Workshop"](#)

Wednesday, March 11 will be a transition day between the two workshops.

Participants registered for either workshop may attend both morning and afternoon sessions that day or can register for both meetings at a discounted rate.

Call for new membership in the TMT International Science Development Teams

The second annual call for new members of the [Thirty Meter Telescope \(TMT\) International Science Development Teams \(ISDTs\)](#) is now open. The ISDTs are organized around eight science themes, from our solar system to cosmology. They provide scientific input and feedback to the TMT project, stimulate planning for future TMT science programs, and are an opportunity to build connections and collaborations within and beyond the international TMT partnership. ISDT membership is open to all Ph.D. scientists. The ISDTs are an opportunity to get involved in TMT and to provide scientific input that will help shape the observatory's capabilities, operations plans, and future directions.

The NASA/NSF Exoplanet Program for WIYN

NASA and NSF in collaboration with NOAO are initiating a program of community-based exoplanet research using the NOAO 40% share of the WIYN telescope. This program would fulfill the decadal report's recommendation that, *"NASA and NSF should support an aggressive program of ground-based high-precision radial velocity surveys of nearby stars to identify potential candidates ... for a future space imaging and spectroscopy mission."*

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Tools for Astronomical Big Data

March 9-11, 2015 in Tucson, AZ at the University Marriott

NOAO is hosting a workshop, "Tools for Astronomical Big Data," to survey the state of the art for solving the challenges of research with large astronomical data sets. The emphasis will be on sharing practical solutions to problems currently faced by astronomers working with frontier surveys. The topics will include:

1. visualization of large datasets,
2. efficient algorithms for processing large datasets,
3. efficient development and interaction with large databases, and
4. the use of "machine learning" methodologies.

The format of the workshop will feature a 50/50 mix of invited and contributed talks – posters are also welcome. The present roster of invited speakers, with titles and preliminary abstracts, is posted at the conference website.

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DECam Community Science Workshop

March 11-13, 2015, in Tucson, AZ at the University Marriott

This workshop will bring together those with experience in obtaining, reducing, and analyzing DECam data – both from the Dark Energy Survey (DES) and the community – with those who would like to use DECam to take their own data or do science with publicly available DES and community images from the NOAO Science Archive. The meeting will provide an opportunity to showcase early DECam science and serve as a forum to discuss the steps NOAO could take to better support community science programs. Topics will include:

1. DECam performance and optimum observing strategies

2. Pipeline reduction and archives – getting the most from the data
3. DECam science from DES and the community
4. What can NOAO do to better support community science programs: what are the successes and what are the problems, what could be improved at the telescope and in the community pipeline, what new observing modes should be considered.

The workshop will include a mix of invited and contributed talks (posters are also welcome). There will also be round table discussions of key topics. The list of invited speakers is posted on the conference web site.

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Call for new membership in the TMT International Science Development Teams **(applications due 16 January 2015)**

The second annual call for new members of the [Thirty Meter Telescope \(TMT\) International Science Development Teams](#) (ISDTs) is now open. The ISDTs provide scientific input and feedback to the TMT project, stimulate planning for future TMT science programs, and are an opportunity to build connections and collaborations within and beyond the international TMT partnership. ISDT membership

is open to all Ph.D. scientists, both from the current TMT partners and from the astronomical community at large. For US astronomers unaffiliated with one of the TMT member institutions (i.e., Caltech and the University of California), the ISDTs are an opportunity to get involved in TMT and to provide scientific input that will help shape the observatory's capabilities, operations plans, and future directions.



Rendered photoillustration of the TMT at night

There are currently eight ISDTs, organized around the following science themes:

- Fundamental physics and cosmology
- Early universe, galaxy formation and the intergalactic medium
- Supermassive black holes
- Milky Way and nearby galaxies
- Formation of stars and planets
- Exoplanets
- Our solar system
- Time domain science

This year there is also an opportunity to propose to form new ISDT working groups. New ISDTs may focus on science that does not fit well within the scope of the existing groups, or on subtopics drawn from one or more of the existing ISDTs that merit additional emphasis within TMT planning.

During the past year, the ISDTs helped to update the contents of the TMT Detailed Science Case, the highest-level guiding document for scientific guidance of the TMT project. ISDT scientists met at the [2014 TMT Science Forum](#) in Tucson, and are now starting to develop ideas for large “key program” science projects with TMT.

Application instructions are available at the [TMT ISDT web site](#), where you can also find more detailed information about the ISDTs, their organizers, and their activities. ISDT membership entails a commitment of time and effort. Applications will be

evaluated by the ISDT organizers and the TMT Science Advisory Committee, based on the candidate's scientific qualifications, the activities that he or she proposes to carry out in support of the ISDT and TMT, and the level of effort that he or she can commit to investing in ISDT activities.

NOAO and AURA are participating in a cooperative agreement between the NSF and TMT to engage the US community and to explore potential NSF partnership in the observatory. AURA is an associate member of the TMT International Observatory, with representatives on its Board of Governors and its Science Advisory Committee. NOAO organizes a [US TMT Science Working Group](#) (SWG), consisting of [13 astronomers from institutions across the country](#), who are helping to prepare a US National TMT Participation Plan for the NSF. For more information about the US TMT SWG and the NSF-TMT cooperative agreement activities, please see the [NOAO TMT Liaison web pages](#).

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The NASA/NSF Exoplanet Program for WIYN

NASA and NSF in collaboration with NOAO are initiating a program of community-based exoplanet research using the NOAO 40% share of the WIYN telescope. This program would fulfill the decadal report's recommendation that, *"NASA and NSF should support an aggressive program of ground-based high-precision radial velocity surveys of nearby stars to identify potential candidates ... for a future space imaging and spectroscopy mission."* The program will



The WIYN 3.5-m Telescope on Kitt Peak

proceed in two phases. In semester 2015B, a pathfinder Guest Observer program for exoplanet science using existing instrumentation on WIYN will be initiated. NASA also intends to release a solicitation in early 2015 for a facility-class extreme precision radial velocity spectrometer for the WIYN telescope with the goal of commissioning in 2018. The second phase of the program is to offer an exoplanet-targeted guest and guaranteed time program at WIYN using the new radial velocity spectrometer and other existing WIYN instrumentation. NOAO will continue to operate its share of the WIYN telescope in support of this program.

Only a short time ago, NOAO intended to withdraw from the WIYN partnership in response to a recommendation from the NSF portfolio review. The new NASA/NSF initiative instead directs NOAO to support continued operation of WIYN by offering the community new leading-edge resources for exoplanet research. At this writing details of this transition remain to be worked out. This brief notice now is to alert the community that this new opportunity to engage in exoplanet research is on the way and that we will keep you informed as the program is developed.

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Contact Us

Your input is welcome on any of these issues. Please send your thoughts to: currents@noao.edu.

Currents is a sparkplug for communication between NOAO and our community. It provides updates—and solicits community input—on NOAO observing opportunities and NOAO programs and policies on a more rapid timescale than is possible with the *NOAO Newsletter*.

NOAO is the national center for ground-based nighttime astronomy in the United States and is operated by the Association of Universities for Research in Astronomy (AURA), Inc. under cooperative agreement with the National Science Foundation.
