

## Contact List

**Kitt Peak Visitor Center**—318-8726  
Nick Petrosino, Supervisor  
npetrosino@noao.edu  
318-8732

**NOAO Public Outreach**  
Rich Fedele, Manager  
rfedele@noao.edu  
318-8163  
Robert Wilson,  
Program Coordinator  
rwilson@noao.edu  
318-8440

### Kitt Peak Docent Program

950 N Cherry Ave  
Tucson, AZ 85719

**Docent Forum:** <http://groups.yahoo.com/group/docentforum/>

**Docent Calendar:** <http://groups.yahoo.com/group/docentforum/>

### Volunteering at Kitt

**Peak:** <http://www.noao.edu/outreach/kpoutreach.html>

[www.noao.edu](http://www.noao.edu)



## Next Docent Meeting Monday, September 17

The next docent meeting will be held on Monday, September 17. The meeting will convene at 6:00 in the main conference room and will feature dinner and a speaker. Docents should visit the docent forum calendar to schedule their hours. Docents who do not have web access may contact Nick Petrosino. See the URL for the docent calendar at lower left.

«First Name» «Last Name»  
«Mailing Address»  
«City» «State» «Zip Code»

# DOCENT NEWS



## ASTRO TRAINING STARTS IN SEPTEMBER

### Points of Interest:

- The docent meeting will resume on Monday, September 17 and will feature dinner and a presentation by Rich Fedele.
- September 1: Aurigid Meteor Shower peak
- September 5: 30th anniversary of Voyager I launch
- September 10: Moon occults Saturn
- September 10: Uranus at opposition
- September 23: Autumnal Equinox, 09:51 UT
- September 29: Mercury at its greatest eastern elongation
- September 29: Asteroid 2000 TH1 near-Earth flyby at 0.081 AU

For additional information about these points of interest, visit [www2.jpl.nasa.gov/calendar/](http://www2.jpl.nasa.gov/calendar/).

Every year Educational Outreach trains teachers, astronomers, and anyone else who is interested to be Project ASTRO partners or Family ASTRO event leaders. And every year Educational Outreach searches for volunteers who enjoy going into the classroom or are willing to introduce families to astronomy in extracurricular programs. This year is no exception.

But this year Educational Outreach is taking a slightly different approach. The department seeks to establish a cadre of trained volunteers to be available as Family ASTRO event leaders that teachers may request to assist with their events.

Volunteers would support teachers who doubt their knowledge of astronomy but see the value of a program that encourages the involvement of parents in their children's science education. Event leaders typically conduct about two events per year so the commitment is negligible. A typical event lasts about two hours.

Educational Outreach also seeks volunteers to attend Project ASTRO training. This

program establishes partnerships between teachers and astronomers, with the astronomers committing to four classroom visits during the academic year. Here too docents are welcome to attend training, but the emphasis of the program is on partnerships. Any docent who knows a teacher in grades four through seven might offer to partner with that teacher and attend the workshop with him or her. Otherwise consider being assigned to a teacher in your area and spending a few hours in a classroom.

An added benefit to attending either the Family or Project ASTRO workshops is learning about the activities, which are used extensively in other public programs. The school and kids' day programs under development draw from the ASTRO activities and will require docent involvement to be successful.

Information and applications are available at <http://www.noao.edu/education/>. The Project ASTRO workshop is September 14 and 15. Family ASTRO from September 28 to October 19.

## DOCENTS NEEDED FOR OVERLAPPING PROGRAMS

Stars and Music and Junior Astronomer are both scheduled for September 22nd. The reservations are minimal at this writing but the programs are advertised and will likely attract fair crowds within a week or so of the events.

Fortunately the events do not run at the same time. Junior Astronomer begins at 4:30 p.m. and lasts two hours. Guests attending Stars and Music will arrive between 6:00 and 6:30, the latter being the start time for that program.

The program coordinator will be on site to conduct both programs but cannot be at the

visitor center and the picnic area at the same time. Therefore, docent assistance will be vital.

Two docents will be needed. One will assist with Junior Astronomer. The other will go to the picnic area at approximately 5:30 to check in guests arriving for Stars and Music. When Junior Astronomer concludes, the other docent and staff will come to the picnic area to get that program started.

Contact the docent coordinator to volunteer for these programs. Visit the docent forum files page to see the activities schedule for Junior Astronomer.

## THIRTY-METER TELESCOPE PROJECT RECEIVES \$15 MILLION FROM MOORE FOUNDATION

The California Institute of Technology and the Regents of the University of California have each received \$7.5 million in additional funding from the Gordon and Betty Moore Foundation for the development of the Thirty-Meter Telescope. The TMT is being developed by a U.S.-Canadian team with construction anticipated to begin in April 2009. The new grants augment the \$64 million already planned for the design development phase of the TMT project, which included \$35 million previously awarded to Caltech and UC by the Moore Foundation.

With the TMT, astronomers will be able to analyze the light from the first stars born after the Big Bang, directly observe the formation and evolution of galaxies, see planets around nearby stars, and make observations that test fundamental laws of physics.

"This new award from the Moore Foundation will enable us to reach construction readiness, and will also initiate industrial production capabilities for the primary segments of the telescope," says Project Manager Gary Sanders.

The TMT is now at the stage of detailed design. When completed it will be the world's largest telescope. It consists of a primary mirror with 492 individual 1.45-meter segments that span 30 meters in total, three times the effective diameter of the current largest telescopes. All of the segments will be under precision computer control so that they work together as a single mirror.

The TMT will not only be the largest optical telescope in the world, but will also be at the forefront of technology in virtually every aspect of its design. Adaptive optics (AO) will allow the TMT to achieve a resolution comparable to a space telescope. Because TMT project engineers are integrating this system with the designs for eight science instruments, the power of the AO system should be available at the beginning of the telescope's operations in 2016.

The baseline AO system for the TMT involves six laser beams launched from a small telescope from the top of the structure that supports the telescope's secondary mirror. These laser beams create a luminous spot in a layer of sodium atoms high in Earth's upper atmosphere, providing artificial points of light analogous to distant stars. These point-like laser illuminated spots drift and wobble just like starlight, giving the AO system reference points to use anywhere in the sky as it compensates for distortions of starlight by Earth's fluctuating atmosphere. This technology has been pioneered at the Lick Observatory, and by the Gemini Observatory 8-meter telescopes, and the Keck Observatory 10-meter telescopes.

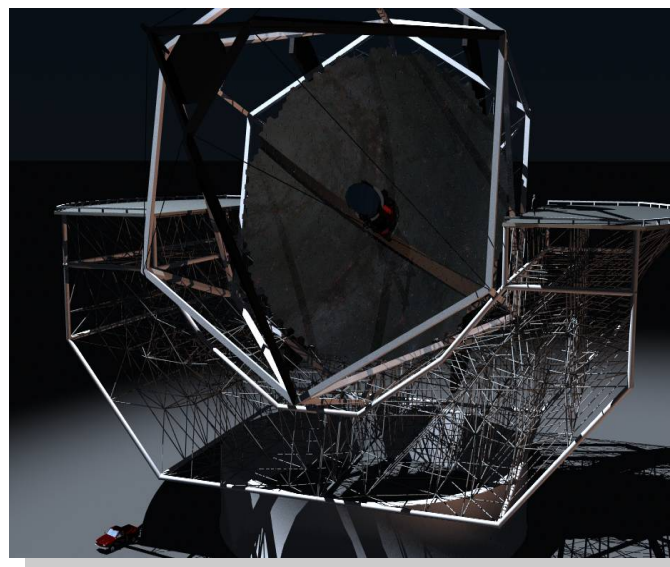
Much of the TMT's scientific work will be done in the infrared, where the best resolution is easier to attain, young stars and galaxies are to be found, and the opportunities for new discoveries are abundant. The TMT project is studying five high sites in Chile, Hawaii, and Mexico as possible locations for the telescope, with site selection planned for May 2008.

Three reviews by an independent panel evaluated all aspects of the project, including its optical design, the telescope structure and its enclosure, science instrumentation, site testing, management, and cost estimate procedures. The panel reached positive conclusions about the level of design development and the prospect for construction readiness by April 2009.

The TMT is a collaboration of the California Institute of Technology, the University of California, the Association of Universities for Research in Astronomy (AURA), Inc., and the Association of Canadian Universities for Research in Astronomy (ACURA), with significant work being done by industry and by university teams studying instrument designs. The project office is in Pasadena, California. The Gordon and Betty Moore Foundation, established in 2000, seeks to advance environmental conservation and cutting-edge scientific research around the world and improve the quality of life in the San Francisco Bay Area. The foundation has committed \$300 million in potential grants over 10 years to the California Institute of Technology to support the institution in maintaining its position at the forefront of higher science and technology education and research. For more information, visit <http://www.moore.org>. For more information on the project, see <http://www.tmt.org>

Jill Perry  
California Institute of Technology  
E-mail: [jperry@caltech.edu](mailto:jperry@caltech.edu)

Tim Stephens  
University of California, Santa Cruz  
Email: [stephens@ucsc.edu](mailto:stephens@ucsc.edu)



Artist renderings of Thirty-Meter Telescope, courtesy California Institute of Technology

# September 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 Jim
2 Larry L.	3 Ken	4 Robert	5 Sheila	6 Joe	7 Doug	8 Jim, Eugene
9 Jack	10 Aubrey	11 Paul	12 Sheila	13 Robert	14 Doug	15 Jim, Ken
16 Jack, Paul	17 Ken Docent Meeting	18 Robert	19 Sheila, Eugene (C)	20 Everett, Joe	21 Doug	22 Larry L. Evening Prog.
23 Paul	24 Everett	25 Paul	26 Sheila, Punch	27 Ken, Everett School Grp. 70	28 Doug, Robert	29 Jim, Eugene
30 Ken						

## ATST GETS ONE STEP CLOSER TO FUNDING

The NSO and its community were very pleased to learn that the National Science Board approved the following resolution at its August 6-8, 2007 meeting: "RESOLVED, that the National Science Board authorizes the [NSF] Director at his discretion to include the construction of the Advanced Technology Solar Telescope in a future budget."

This action moves the ATST out of the "Readiness" stage and makes it a potential new start in the Major Research Equipment and Facility Construction (MREFC) account. While National Science Board approval is not a commitment of funds, it is a necessary step toward a possible future appropriation for a construction start.

The ATST Project Team deserves our congratulations for all their superb efforts that enabled us to cross this major thresh-

old. The NSO also extends its special thanks to NOAO staff members Jeff Barr and Chuck Gessner for their contributions to the ATST project.

Mark Giampapa  
Jeremy Wagner

