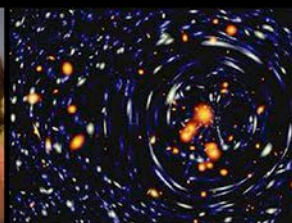


Large Synoptic Survey Telescope

E-News



LSST E- NEWS

AUGUST 2015 • VOLUME 8 NUMBER 2

WELCOME TO THE AUGUST 2015 ENEWS



Construction continues on Cerro Pachón despite snow. (V. Krabbendam, LSST Project Office)

Considerable activity in both hemispheres has kept the Project Office quite busy the past few months. And looking ahead we have our calendars marked for the week of August 17, when the LSST2015 Project and Community Workshop takes place in Bremerton, WA, and for September 1, the date Deputy Director Beth Willman officially takes up residence in her new office in the LSST Project Office.

The LSST team continues to increase in size as described in an article in this issue, and hiring opportunities continue to be promoted at lsst.org/hiring. Our web presence has a new look at www.lsst.org, presenting a coherent look for our various audiences: Public & Scientists, Project team, and LSST Corporation.

The Camera Team is preparing for the CD-3, Critical Decision-3, review, taking place at Brookhaven National Lab the week of August 3rd. This is a huge milestone for the project as a successful review will lead to authorization of expenditures associated with the fabrication of the camera. This DOE review is similar in significance to the NSF Final Design Review, which the project passed in December 2013. Keeping the agencies synched in their required review process has been a complex aspect of keeping LSST moving forward.

The Telescope & Site team has been busier than ever, with completion of the M1M3 mirror, getting RFPs out for both the M1M3 cell assembly and coating chamber facility on the summit, and, finally, finding solid ground on the summit of Cerro Pachón that supports the telescope pier and summit facility building. This was more difficult (and required more concrete) than expected, to mitigate pockets of clay found within the bedrock at both building sites.

Big themes for the Bremerton Meeting include improving our Communication, internal and external, and planning for Operations, a proposal for which will be due to the agencies at the end of calendar year 2016.

LSST 2015 PROJECT & COMMUNITY WORKSHOP

LSST 2015 takes place in Bremerton, WA, the week of August 17 and consists of a Project Meeting followed by a community Observing Cadence Workshop. As we go to press, 228 individuals have registered to attend with Wednesday having the largest attendance (195).

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Astronomy Slam plus Weekly Lectures. (Jeff Ptaszynski, Olympic College)

See you in Bremerton for a productive - and memorable - gathering of all things LSST!

NEW WEB PRESENCE FOR LSST

After many months of effort, new LSST web pages went live on July 28 at www.lsst.org. This new web presence offers a more modern look, consistent across the many audiences served by the site, including the Public and Scientists, Project Team, and LSST Corporation. The site architecture allows for easier updates with the responsibility for keeping content current distributed across a group of subject-specific content editors.

Using a responsive Drupal theme, the website is designed to scale with different screen sizes on multiple platforms and browsers. Currently mobile devices account for about 15% of visits to lsst.org, a number we expect to only increase in the future. Chrome continues to be the most popular browser (at 42%) with Firefox and Safari close behind (21% & 20%, respectively); Internet Explorer currently accounts for 12% of our web traffic.

Moving forward, the site will undergo rigorous Usability Testing with an external provider, evaluating how representatives of all our audiences use the site. The website

Main themes for the Bremerton meeting include improving our communication, internal and external, as well as planning for LSST Operations, a proposal for which will be due to the agencies at the end of calendar year 2016. The workshop agenda is posted online, and all can follow the action with Twitter hashtag #LSST2015.

In addition to the technical meetings and the Observing Strategy Workshop, an extensive program of public evening events at Bremerton's seeFILM Theater has been arranged by Bob Abel of Olympic College. Each evening there will be a public lecture by an LSST scientist on his or her research topic. In addition, Tuesday evening features an Astronomy Slam, "Five 12-minute stories by world renowned astronomers" at each of five Bremerton locations.



New LSST Homepage. (LSST Project Office)

will continue to improve as we better understand our users and their ways of interacting with lsst.org.

Many people contributed to the new website design, content, and deployment including our science and project review teams. Special acknowledgement goes to the web "tiger team" who worked especially hard the past few months to pull it all together and launch the new site: Emily Acosta, Iain Goodenow, Rob McKercher, Cathy Petry, Lori White, and Suzanne Jacoby.

SLAC CAMERA ASSEMBLY CLEAN ROOM COMPLETED

SLAC National Accelerator Laboratory celebrated completion of the LSST camera assembly clean room on May 8. The clean room is necessary for assembly of the LSST camera because any dust settling on the image sensors would degrade the quality of the precision device. The air inside the new facility is about 1,000 times “cleaner” than ordinary air. The main 1,875 square foot work space has a ceiling height of 24 feet to allow the approximately 10-foot-long camera body to be mounted vertically for optical alignment and final testing.

“The completion of the clean room is a big milestone for the lab,” said LSST Director Steven Kahn. “It’s the first major piece of LSST infrastructure here at SLAC.”

The DOE laboratory is responsible for providing the LSST’s 3.2 gigapixel digital camera. Assembly of the camera will occur over the next four years.

Adapted from a SLAC news feature.



Visitors inspect the newly completed SLAC LSST camera assembly clean room during the facility’s opening ceremony May 8. The opening ceremony was the only time visitors will be allowed to go inside without an escort, special training and full-body “bunny suits.” (SLAC National Accelerator Laboratory)

WELCOME PAT OSMER TO THE LSST TEAM



Patrick Osmer. (The Ohio State University)

After a long and distinguished career at The Ohio State University, first as Chair of the Department of Astronomy and then since 2006 as Vice Provost of Graduate Studies and Dean of the Graduate School, Patrick Osmer is stepping down from university administration effective August 31 to return to his roots in the astronomy research community. We are very fortunate that Pat has agreed to join the LSST team as a senior advisor to the Corporation.

LSSTC is in the midst of mounting a campaign to raise public and private investment in enabling science with LSST.

The LSST data set will represent the ultimate in big data challenges to the science community and a paradigm shift for astronomy and physics. Preparing the science community now to face this challenge is a primary goal for LSSTC, one that will be significantly enhanced by Pat’s standing in the community as a scientist and experienced academic administrator. His connections in the international astronomy community will also be invaluable to another primary goal of the LSSTC, namely raising international contributions to operations of LSST. Finally, his experience and strong connections to the astronomy community will be a tremendous asset to our engagement in initial planning with AURA, SLAC and the LSST Project for LSST operations.

LSSTC is very excited by this development and looks forward to working with Pat to realize these important goals. Welcome Pat to the LSSTC team.

COMPLETED M1M3 SUCCESSFULLY MOVED TO STORAGE



The flatbed trailer-truck carrying the LSST M1M3 (primary/tertiary mirror) in its shipping container backs into the hangar at Tucson International Airport where the mirror will be stored until it can be integrated with the mirror support cell. (LSST Project Office)

Before dawn on May 19, the completed LSST primary/tertiary mirror (M1M3) was safely moved from the UA's Richard F. Caris Mirror Lab (formerly Steward Observatory Mirror Lab) to long-term secure storage at Tucson International Airport. Contractor Precision Heavy Haul

executed the eight-mile, three-hour move under the supervision of LSST technical and safety personnel. The mirror move is the culmination of years of hard work and dedication from the LSST technical team, the mirror lab, and generous support from the LSST Corporation and private donors. Local coverage of the event in the Tucson newspaper includes images and a short video.

The move took place in the wee hours because the 30-foot wide, 14-foot tall metal crate was too big to travel the roads during the day. The previous day, Precision Heavy Haul had secured the 56-ton combined load of the mirror in its custom-built shipping container onto a specially designed flatbed trailer-truck. The shipping container was built by CAID Industries. At the storage location, the crate was opened and the mirror inspected before being resealed to await eventual transportation to Cerro Pachón in Chile. In the photo, the flatbed carrying M1M3 backs into the hangar where the mirror will be stored.

EXCAVATION ACTIVITIES ON CERRO PACHÓN



Lower concrete platforms will support the summit facility building foundation. (LSST Project Office)

Excavation activities on site are nearing completion, but during excavation, substantial amounts of fractured rock and clay materials were discovered in the area where the support building facilities will be constructed. Removing the surface rock on the slope off the main peak revealed clay deposits that were not identified during the geotechnical surveys completed prior to construction. The general contractor, Besalco, has completed the removal of

the fractured rock and clay, and following a detailed inspection by architectural and engineering firm Arcadis, a remedy of concrete fill has been identified and initiated to build up the necessary foundation. The presence of bedrock lower into the hillside sufficient to support a remedy for the foundation of the summit facility support building has been confirmed and a design developed to replace the missing bedrock with concrete. The issue and remedy applies specifically to the lower sections of the summit facility building; the telescope pier and dome lower enclosure regions were previously confirmed to be located in competent bedrock. LSST, Arcadis, and Besalco worked together to define the solution. Besalco has completed the first phase of the remedy by creating concrete platforms from H10 concrete to use as the foundation support of the building columns. The second phase of the remedy is in progress using additional concrete to build

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up under the floor slabs and in toward the hillside. The solution will yield a technical performance consistent with the original design but has caused a 6 week delay in the construction. The delay was mitigated by early and preemptive permitting for a concrete batch plant that was

not originally planned but is now the preferred and expeditious approach to creating the necessary concrete. Telescope and Site staff are working with their contractors to keep the delay within the existing schedule float so there is no impact on the Project's critical path.

CHILE-U.S. ASTRONOMY EDUCATION SUMMIT



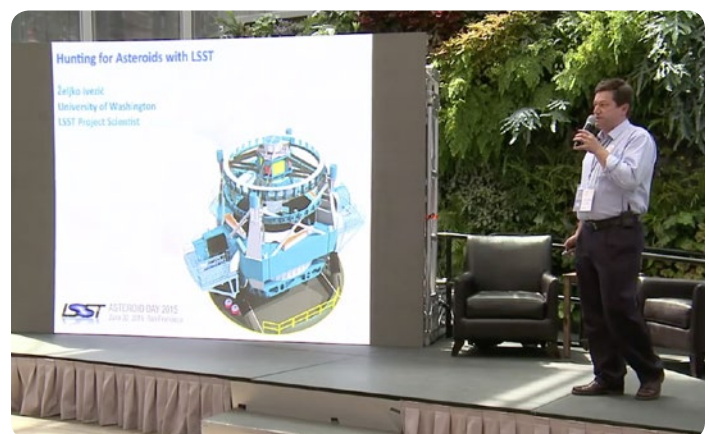
(Daniel Munizaga, CTIO/NSF/AURA)

LSST Manager for EPO Suzanne Jacoby participated in the first Chile-U.S. Astronomy Education Summit the week of March 21, 2015. Organized by Associated Universities Inc. (AUI), Association of Universities for Research in Astronomy (AURA), Carnegie Institution for Science, the

United States Embassy in Chile, and CONICYT, the summit took place at various locations throughout Chile. A traveling team of 35 astronomy education and outreach experts from Chile and the United States met with educators, administrators, and other outreach professionals to build capacity and to improve communication, coordination, and collaboration between Chile EPO initiatives and between Chile and the United States. Continued engagement among the participants will improve public outreach strategies and activity in Chile and lay the foundations for more cohesive program planning and use of resources, leading to greater impact in the future. More information can be found at www.astroeducacion.cl/

LSST AT ASTEROID DAY 2015

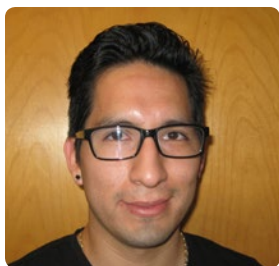
LSST Project Scientist Zeljko Ivezic presented a talk describing LSST's asteroid detection capabilities during Asteroid Day June 30, 2015 at the California Academy of Sciences in San Francisco. During his talk, entitled "Hunting for Asteroids with LSST," Zeljko described LSST as an "amazing discovery machine for new asteroids" whose unique design, particularly its large mirror and huge field of view, addresses the main challenges of finding asteroids: detecting faint objects and covering the whole sky. Zeljko's talk can be viewed on YouTube.



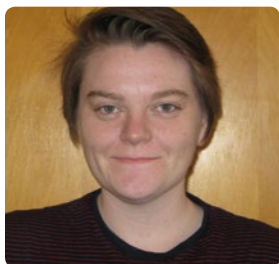
(California Academy of Sciences)

Held annually on the anniversary of the 1908 Siberian Tunguska event at multiple locations worldwide, Asteroid Day is a global awareness movement where people come together to learn about asteroids and what we can do to protect our planet, our families, communities, and future generations. Asteroid Day focused solely on the science and study of asteroids – how to detect them and how to protect our planet from their impacts.

LSST HOSTS SUMMER INTERNS



David Enciso, a senior in aerospace engineering at Iowa State University, served an IINSPIRE internship with LSST May through July. David worked with Systems Engineering Manager George Angeli, Telescope and Site Senior Engineer Ed Hileman, Telescope and Site Technical Manager Shawn Callahan, and Myung Cho on the thermal and structural finite element model for the M1M3 (primary/tertiary) mirror. His project's objective was to fine tune LSST's detailed thermal FE model and validate it against optical surface measurements. The IINSPIRE-LSAMP program is an NSF alliance among 16 universities and colleges working together to broaden the participation of under-represented minorities in STEM.



Rose Gibson, a junior studying astrophysics at Wellesley College in Massachusetts, is working over the summer as an REU intern with System Scientist Chuck Claver. Rose's project aims to develop predictive capabilities for contrail avoidance within the LSST scheduler. Aircraft and contrail avoidance is one of the short term aspects of the LSST's cadence optimization. Commercial aircraft emit a transponder signal on 1.090 Ghz called ADS-B. These digitally encoded signals provide information about the aircraft's altitude, speed, heading and positions and can be received readily using a small software defined receiver and a Raspberry Pi. REU, or Research Experiences for Undergraduates, is an NSF-sponsored program.

LSST E-NEWS TEAM:

- Suzanne Jacoby (Editor-in-Chief)
- Robert McKercher (Staff Writer)
- Mark Newhouse (Design & Production: Web)
- Emily Acosta (Design & Production: PDF/Print)
- Additional contributors as noted

The effort to build the LSST is a partnership between public and private organizations. Financial support for LSST Design and Development comes from the National Science Foundation, the Department of Energy, and private funding raised by the LSST Corporation, a non-profit 501(c)3 corporation formed in 2003, with headquarters in Tucson, AZ. Contributions from private foundation gifts, grants to universities, and in-kind support from laboratories and other LSST Member Institutions were key to early construction and critical developments. The LSST Project Office for central management was established as an operating center under management of the Association of Universities for Research in Astronomy (AURA). The Department of Energy funded effort is managed by the SLAC National Accelerator Laboratory (SLAC).

LSST E-News is a free email publication of the Large Synoptic Survey Telescope Project. It is for informational purposes only, and the information is subject to change without notice.

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