Large Synoptic Survey Telescope
E-News

LSST E- NEWS

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Welcome to the October 2013 issue of LSST E-News - and the new fiscal year! The LSST Project Office has taken steps to avoid any disruption of regular activities and remains focused on preparation for our Final Design Review (FDR). FDR preparation and increased international collaborations are featured in this quarter's E-News stories.

DIRECTOR'S MESSAGE

Well, I have been on the job for two and a half months now, and I must say that I have found being LSST Director to be an exciting, challenging, and somewhat exhausting position!

Our team is hard at work preparing for our Final Design Review (FDR), which is scheduled for the week of October 21. We held a week-long Joint Technical Meeting in Tucson in mid-August, at which we ironed out a host of residual technical interface issues, and refined our strategy for the presentations we will make at FDR. This was a very enjoyable and productive meeting, bringing together all of the key technical personnel who are engaged in the various aspects of the LSST design and development. Despite the +100°F temperatures, we all had a great time.

The Joint Technical Meeting was preceded and followed by a series of internally commissioned external reviews of many of our subsystem design elements. In August and September alone, we held reviews of the science raft system in the camera, the active optics system, our image simulator development, the core data processing software, and the overall LSST safety plan. These reviews have all gone well, and they have provided encouraging validations of our overall design strategy.

Victor Krabbendam and I made a visit to Chile just after the Joint Technical Meeting, where we had the opportunity to meet with key representatives of the Chilean government, as well as most of the Chilean astronomical community. I found that visit to be

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Steven Kahn, LSST Director, prepares to speak in Chile.

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extremely useful for me personally, and I intend to visit relatively frequently over the coming years.

Since taking over as Director, I have been making small changes to our overall organization structure, mainly to try to better clarify the roles of the various scientists on the project and our interactions with the broad community of LSST users. I have replaced our former Science Council with a Project Scientist Team, which consists of the key scientists working in the various subsystems. The Project Scientist Team will function as a kind of "cabinet" for the Director and the Project Manager, helping us to refine our approach to the various technical and scientific tradeoffs we are likely to face as we get deeply into construction. I am also strengthening and formalizing the role of the Science Advisory Committee, which will be the primary vehicle that the project will use in communicating with and taking advice from the external community.

All of you read the newspapers, so you are well aware of the political turmoil in Washington associated with the approval of the federal budget for the coming fiscal year, which begins on October 1. We have been following the situation closely in consultation with the responsible officials at NSF and DOE, in order to ensure that we have a viable strategy to deal with the possible funding scenarios that may emerge from this process. I am optimistic that we will survive unscathed and officially begin construction by July 1, 2014 as currently planned, but accommodating such programmatic uncertainties is certainly one of the more challenging aspects of my job.

In summary, all is going well, and we have a very exciting year ahead of us.

Steven M. Kahn
LSST Director

JOINT TECHNICAL MEETING

More than 80 LSST team members attended the Joint Technical Meeting (JTM) August 12-15, 2013 at the Omni Tucson National Resort. The workshop brought together the distributed team of managers, scientists, engineers, and administrative staff who contribute to the programmatic, design, and technical work of the LSST Project. In particular, the team tackled remaining issues to be resolved in interfaces and the integrated project schedule in preparation for the National Science Foundation Final Design Review (FDR) scheduled for October 21-25 in Tucson. The agenda also included external reviews of Image Simulation and the LSST Safety Program later in the week. In the photo, the team poses for a group photo at the edge of the Omni golf course on Tuesday afternoon.

The LSST Director, Project Manager, subsystem project managers, and systems engineering team met Tuesday afternoon to finalize the integrated project schedule. One key element of the schedule, the recently adopted plan to use a commissioning camera during early commissioning, was the focus of a Wednesday morning plenary presentation and a Wednesday afternoon breakout session. In addition, each system-level interface control document (ICD) received a dedicated breakout session during which the team assessed development progress since the May 2012 Joint Interface and Management (JIM) Review; prioritized further activities that could be completed by FDR; identified any risks associated with the ICD; and established the Phase 3 need date and necessary associated activities.

The LSST Project Office (LSSTPO) chose to hold a technical workshop rather than an All Hands Meeting (AHM) as has been done in previous summers primarily due to the need to complete substantive work before FDR. However, a secondary consideration was the view expressed by many attendees after last summer's AHM that the broad scope

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LSST team members meet in Tucson for a Joint Technical Meeting.

of that meeting's agenda was an obstacle to productive interaction. The JTM was an experiment in adopting the suggested approach of holding more frequent, targeted workshops in addition to AHMs.

Based on post-meeting survey results, the strategy of holding a smaller meeting with focused, concrete objectives appears to have mitigated some of the "agenda overload" identified after the last AHM. 84% of respondents rated the JTM as more productive than the 2012 AHM. In addition, the LSSTPO intentionally scheduled significant amounts of open time throughout the agenda to allow for ad hoc side meetings. One respondent (surveys were submitted anonymously) noted that this allowance for impromptu meetings was particularly valuable for real-time resolution of questions and actions coming out of the scheduled breakouts. The LSSTPO will evaluate the feasibility of repeating the practice.

View the full survey results report here: www.lsst.org/News/enews/jtm-survey-results-2013.pdf

LSST@EUROPE

The Institute of Astronomy, University of Cambridge, UK was the site of a recent conference, LSST@EUROPE, that brought together US and European scientists for four days of talks and discussions to foster international collaboration. LSST Project Scientist Zeljko Ivezic chaired the Science Organizing Committee and attended the conference with several colleagues.

With LSST moving towards the start of federal construction expected in 2014, and with science operations planned to commence in 2021, it was timely to consider the scientific opportunities of LSST in the era of major new European facilities, especially wide-field missions such as

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Group photo of the LSST@Europe participants

Gaia, eRosita and Euclid, and flagship ground based facilities such as ESO's E-ELT. This first meeting in Europe that was focused exclusively on LSST-related science brought together LSST scientists and over 100 European scientists from 20 countries involved in, or interested in, taking LSST forward. The Science Organizing Committee was chaired by Zeljko Ivezic and included three members of LSST Project (Mario Juric, Andy Connolly and Robert Lupton). The meeting was also attended by Project members Steve Kahn, Tony Tyson, and Abi Saha, as well as by representatives of funding agencies (Jim Ulvestad and Nigel Sharp from NSF and Kathy Turner from DOE, as well as Colin Vincent from the UK STFC). Quite a few members of LSST Science Collaborations also attended: Eric Aubourg, Victor Debattista, Henry Ferguson, Suvi Gezari, Bhuvnesh Jain, Marc Moniez, Samaya Nissanke, Reynald Pain, Branimir Sesar, Ohad Shemmer and Lucianne Walkowicz.

The meeting provided an opportunity to review the current status of the LSST and the key science programs which are underpinning its development. The list of all talks, and for most talks links to slides, is available from the meeting website.

The topics ranged from studies of our Solar System and the Milky Way, to the Universe at the largest scales. Highlighting but a few, Mikael Granvik presented a novel application of LSST data: a search for Earth's temporary natural satellites, and Bhuvnesh Jain summarized theoretical cosmological considerations about how to go beyond dark energy. The conference also included a number of presentations that identified current science challenges where a combination of LSST and leading new European facilities and expertise will result in major leaps in understanding. Timo Prusti conveyed the excitement about upcoming Gaia launch, Yannick Mellier talked about synergies between LSST and Euclid, and Kirpal Nandra introduced eROSITA mission. We had a very good discussion session which, in addition to covering synergies between LSST and Gaia, Euclid and other European surveys, also explored how to maximize the science impact of LSST through networking and research training.

Overall, the atmosphere was one of excitement, with our European colleagues clearly showing strong interest in LSST.

Article written by Zeljko Ivezic, LSST Project Scientist

SANDRA ORTIZ – STELLAR ADMINISTRATIVE ASSISTANT, WARRIOR

Welcome Sandra Ortiz, LSST Administrative Assistant

Administrative Assistant Sandra Ortiz joined the LSST Project Office (LSSTPO) July 1, 2013. Sandra is responsible for the majority of daily office administration tasks such as logistics, coordinating project-wide travel, managing calendars, and organizing meeting arrangements. She comes to LSST after several years working as the Assistant to the Vice President for the Muscular Dystrophy Association National Headquarters in Tucson. Motivated by helping others, Sandra's goal is to create a positive impression of the project for everyone involved by anticipating needs and making processes as transparent to the user as possible.

"Having others enjoy their experience means I've done a good job," Sandra said.

While Sandra has a business administration background, she didn't initially intend to become an administrative assistant. In fact, she nearly joined the Navy before meeting her significant other and changing her mind. Her boss at one of her first jobs set her down the administrative assistant career path.

"He taught me the fundamental value of good customer service based on an understanding of people's needs," Sandra said. "He gave me the opportunity to gain experience in a career that has turned into something I really enjoy doing."

Sandra takes pride in her ability to determine the best course of action to assist a co-worker, even when the person may not fully understand his or her own needs. She enjoys learning and remembering her charges' tastes and preferences.

Being new to LSST, Sandra said her biggest challenge so far has been learning the acronyms and developing an understanding of the project's various subsystems and how they relate to one another. Despite that challenge, she feels fortunate to be part of a project with such transformative promise.

"I enjoy learning about new technology and hearing where science will take us next," she said. "So being this close to a project where science and technology is advancing to new levels is a remarkable experience."

In her spare time, Sandra likes to spend time with her daughter, hike, camp, ride ATVs, and participate in

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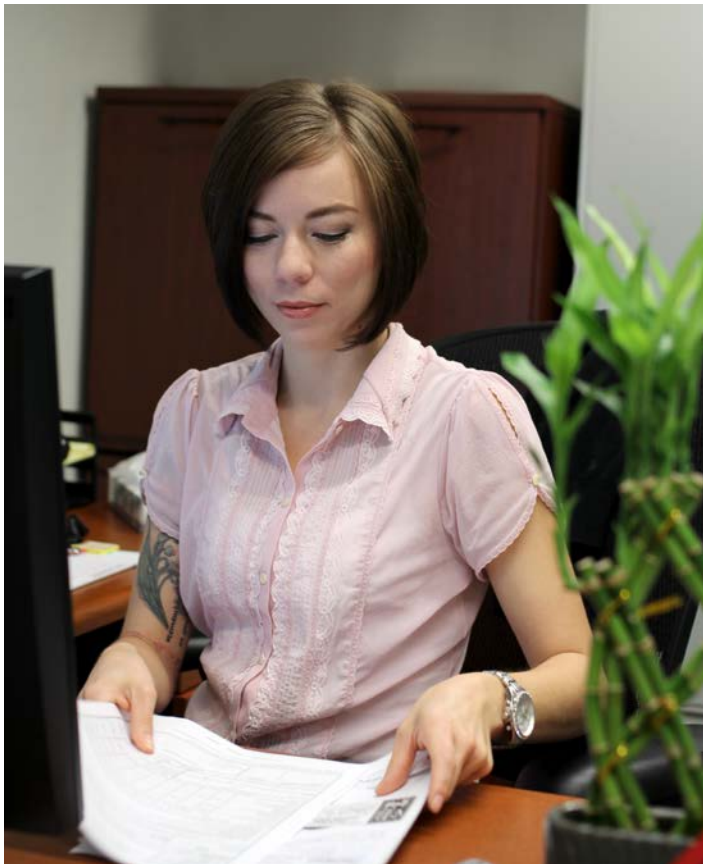

Sandra (Cont.)

obstacle races. One race she has run a number of times, the Warrior Dash, has a 3.2-mile course with 15-20 obstacles, including barricades, trenches, thick mud pits, cargo and wooden wall climbs, ledge-walking over mud pits. Many of the obstacles have a simulated hard "rain" falling over them during the race.

"Last year's race had a "warrior roast," and I got to jump over a few feet of blazing fire."

Sandra approaches her obstacle races and work with the same attitude.

"I believe it doesn't matter what you're doing or who you're doing it for; the work you do should always be to the best of your ability and accomplished with professionalism and respect. I enjoy being knowledgeable about what I do, passing on my knowledge to others, and helping not only those in my line of work but in my community."

Article written by Robert McKercher and Sandra Ortiz

LSST REVIEW SEASON

Another day, another review!

The sign on Data Management Subsystem Project Manager Jeff Kantor's door says it all. In preparation for the NSF Final Design Review scheduled for later this month, LSST has conducted 21 formal external reviews of its program policies or component parts in the 2013 calendar year. Some of the elements that have been reviewed are photometric calibration, image simulation, database architecture, risk management processes, the project safety program, and the active optics system.

Each review has engaged a panel of experts external to the project who have evaluated system designs, documentation, and processes. After the conclusion of each review, the review panel has provided the project with a formal, written response addressing specific points from a written charge. The system being reviewed then provided a formal, written response to the panel's comments and recommendations. Both the panel reports and the project responses are posted to the individual reviews' dedicated websites. The list of reviews conducted and links to their individual review websites can be accessed from the Review Hub page of the project's intranet website.

The results of these reviews have been invaluable both for confirming the appropriateness of designs and processes and for refining documentation and the way in which the project communicates its messages.

Now, on to the next review…

Article written by Robert McKercher

LSST MIRROR STATUS - THINKING OUTSIDE/INSIDE THE BOX

LSST mirror and box nearing completion

The unique LSST primary/tertiary (M1/M3) mirror surfaces are nearing perfection. Both mirror surfaces are being carefully polished and optically tested at the University of Arizona's Steward Observatory Mirror Lab with completion anticipated by March 2014. Testing has transitioned from the realm of mechanical measurement to optical measurement as the remaining deviations from the mirror's perfect smooth shape are now on the scale of nanometers instead of microns. (For reference, a human hair is ~50 microns. A nanometer is a billionth of a meter, the size of a virus or wavelength of optical light.) After completion, the polished M1/M3 will be stored in Tucson until the telescope cell has been fabricated to enable final integrated testing before shipment to the summit in Chile. CAID Industries in Tucson has completing fabrication of a specialized storage/transport container for safe and secure transport of M1/M3. The outer frame and cover of the 9-meter x 9-meter metal box is shown in the right half of the above photograph.

SECONDARY MIRROR OPTICAL FABRICATION CONTRACT AWARDED

ITT Exelis has been awarded the optical fabrication contract for LSST's 3.5m secondary mirror assembly. The two-phase contract was awarded by AURA on behalf of the LSST project. The first phase supports vendor-specific engineering design activities targeted at risk reduction. The second phase includes the optical fabrication, testing, and integration of the finished mirror into the LSST-supplied M2 cell assembly.

Exelis is a global aerospace, defense, information and technical services company headquartered in McLean, Virginia. The company leverages a 50-year legacy of customer knowledge and technical expertise to deliver affordable, mission-critical solutions to U.S. and international customers.

In a press release July 10, Exelis' Director of Universe Exploration programs, Gary Matthews said, "Our risk reduction work will ensure that scientists receive high-quality images to support their research. We will verify that the optical metrology plan will provide an accurate and repeatable measurement. In turn, this will confirm that the quality of the secondary mirror during processing and mounting meets LSST specifications."

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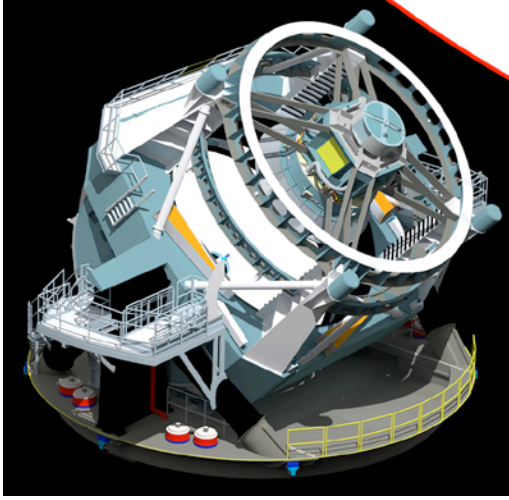

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