

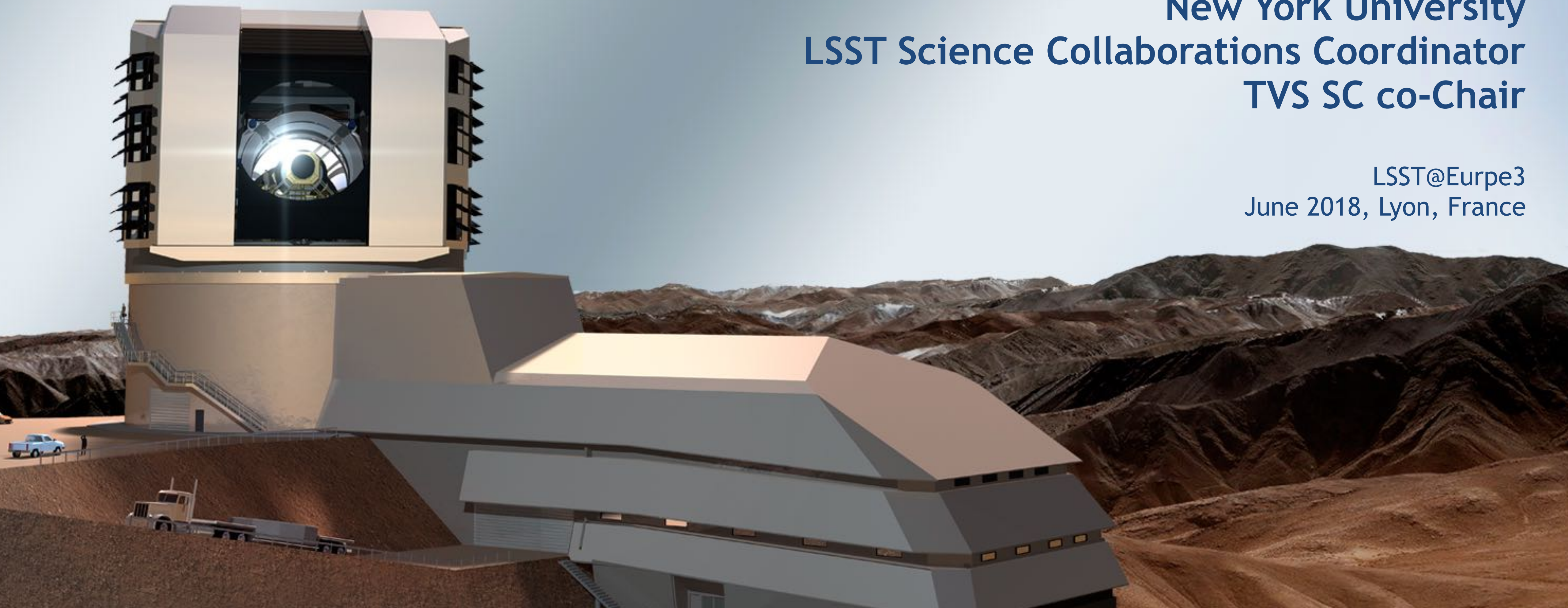


The LSST Science Collaborations

Federica B. Bianco
New York University

LSST Science Collaborations Coordinator
TVS SC co-Chair

LSST@Eurpe3
June 2018, Lyon, France



LSST Science Collaborations

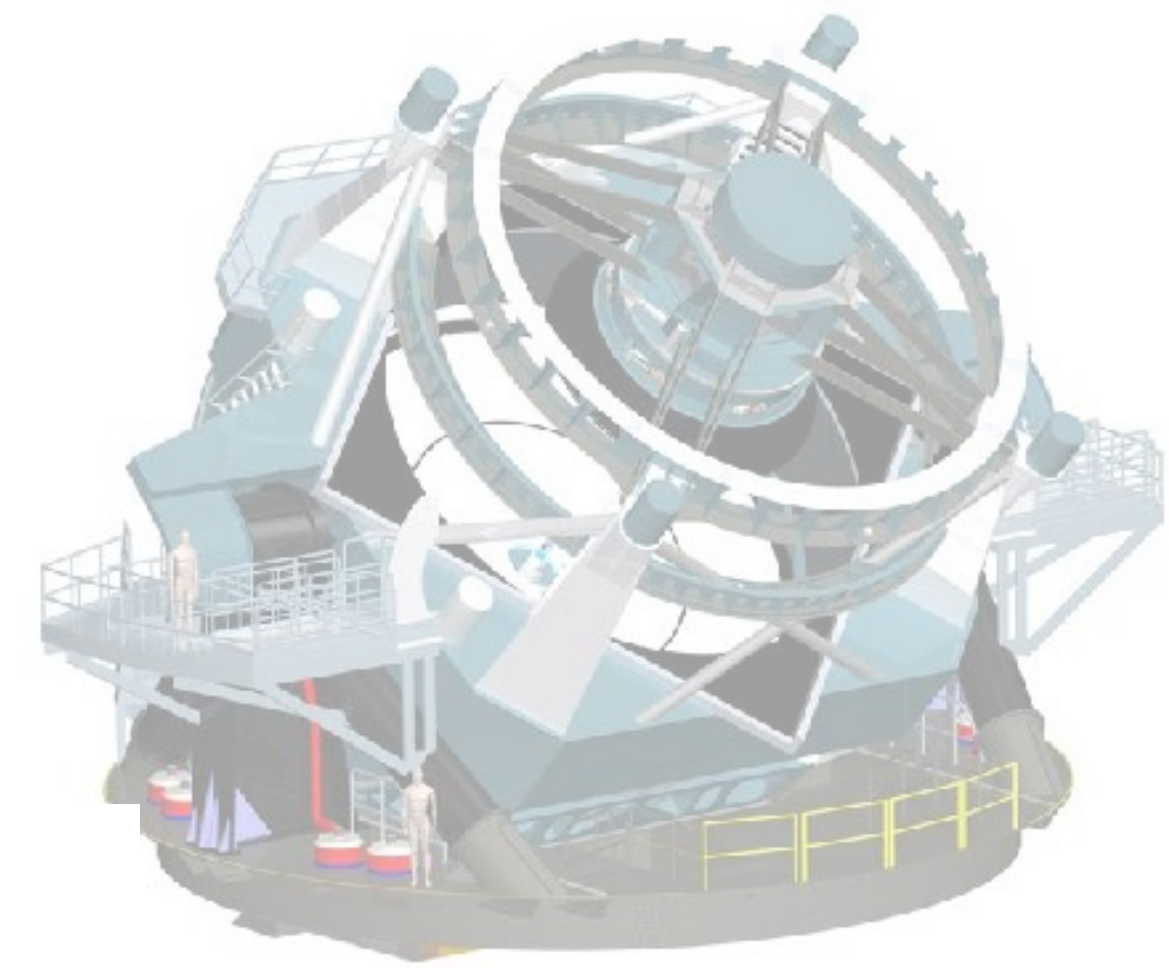
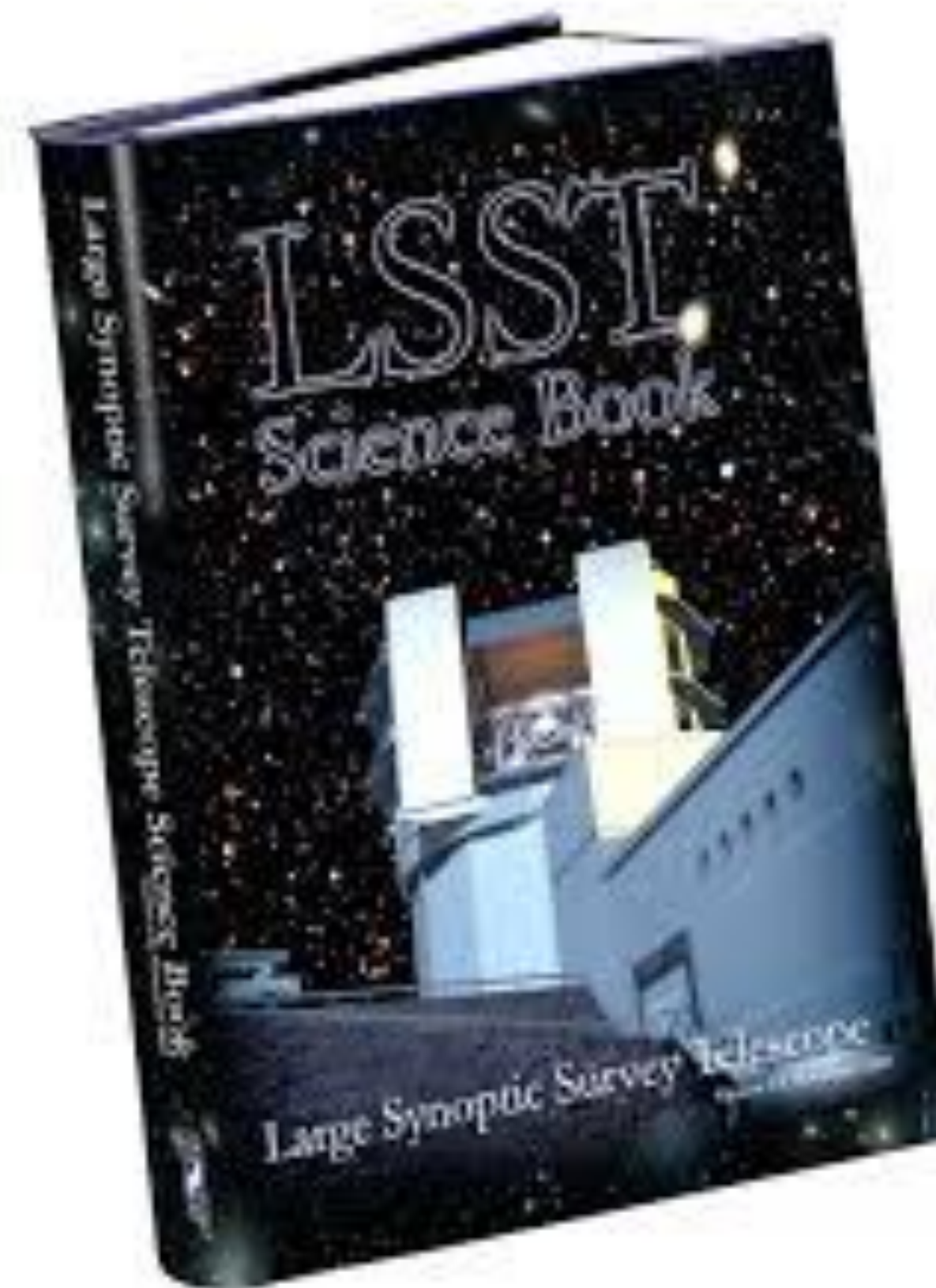
The Science Collaborations:

Formed by the LSST Project in 2006 with the intent to provide a forum to engage the community in interacting with the project team and played an essential part in producing the LSST Science Book in 2009.

At this stage, the LSST Project no longer oversees the LSST Science Collaborations: they set their own policies for admission, governance, publication, etc.

The only constraint is that their members must have LSST data rights.

Any scientist with LSST data rights, including members of the US, and Chilean scientific community and international contributors who signed an MOU with LSSTCorp are welcomed into the LSST community, including the right to apply to join one or more Science Collaborations.



LSST Science Book

Version 2.0

November 2009

Prepared by the LSST Science Collaborations,
with contributions from the LSST Project.

LSST Science Collaborations

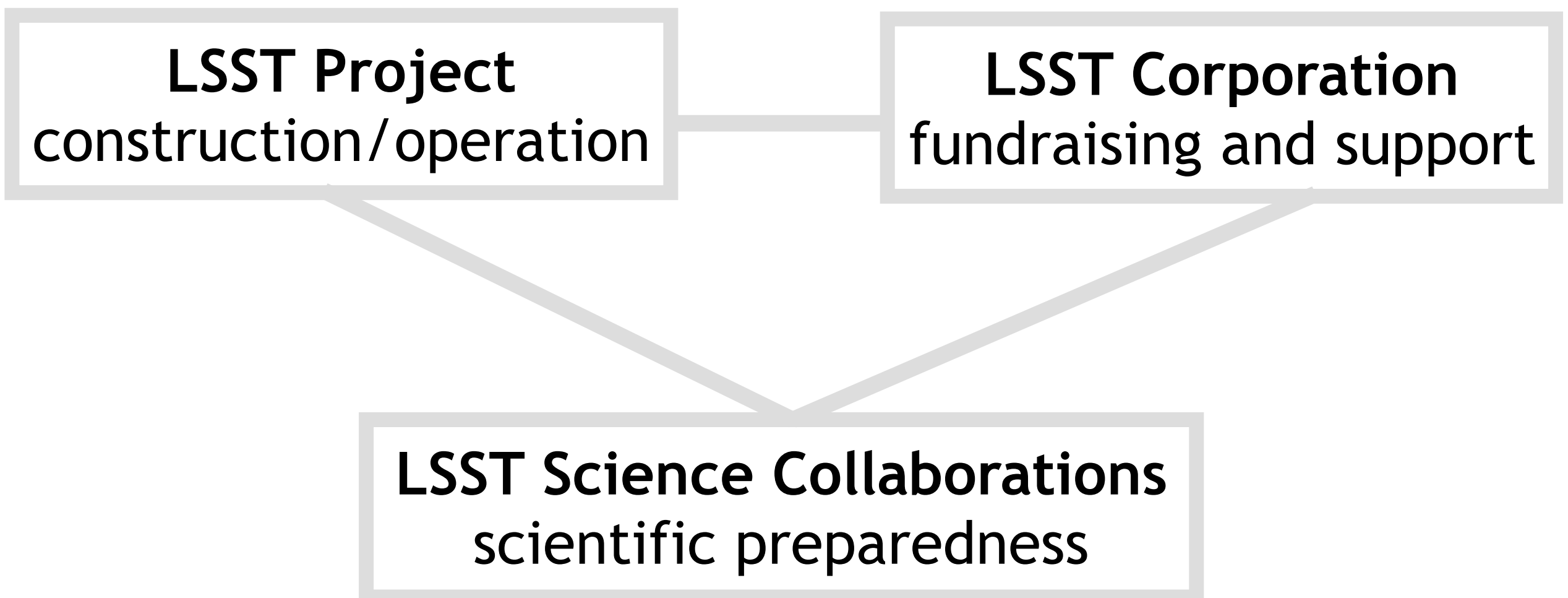
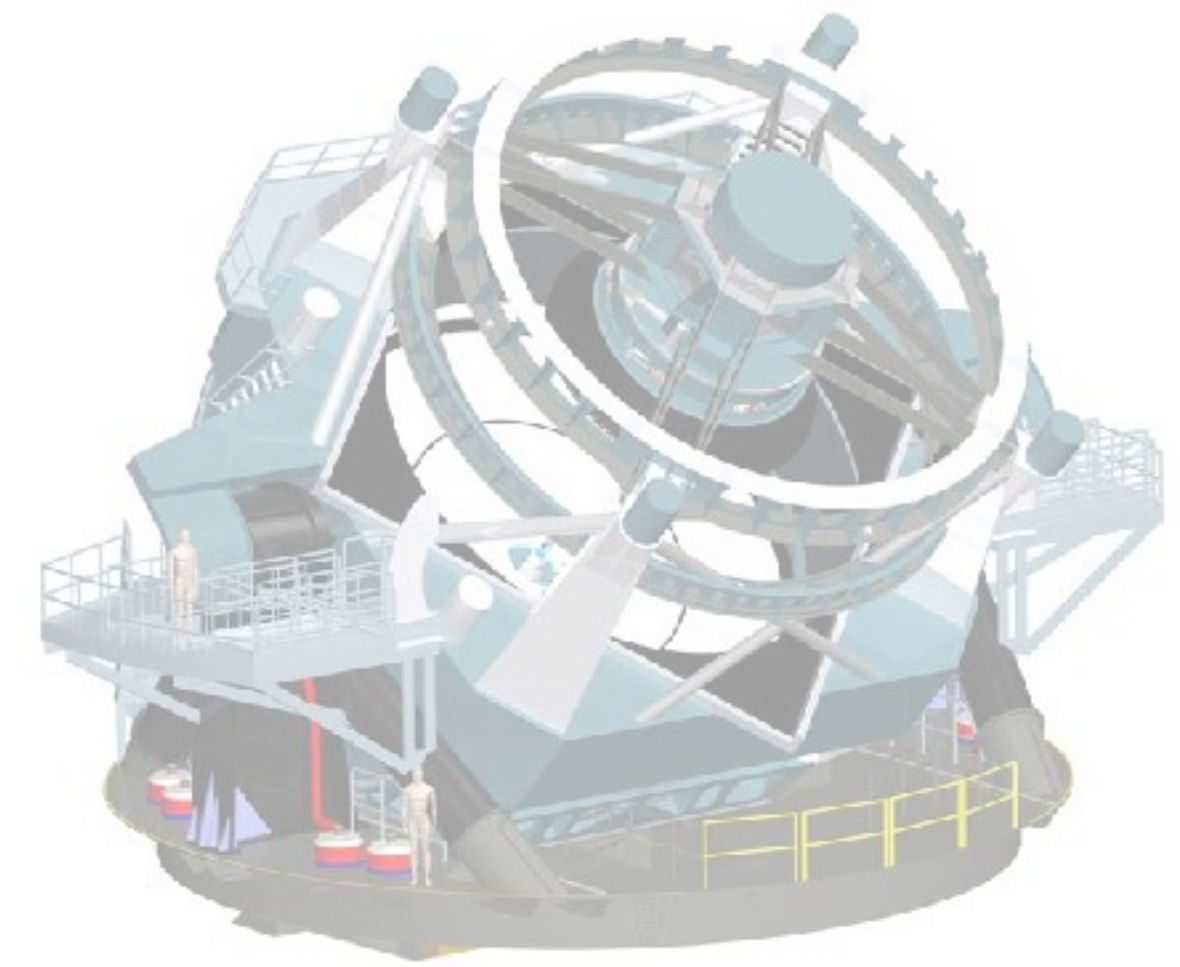
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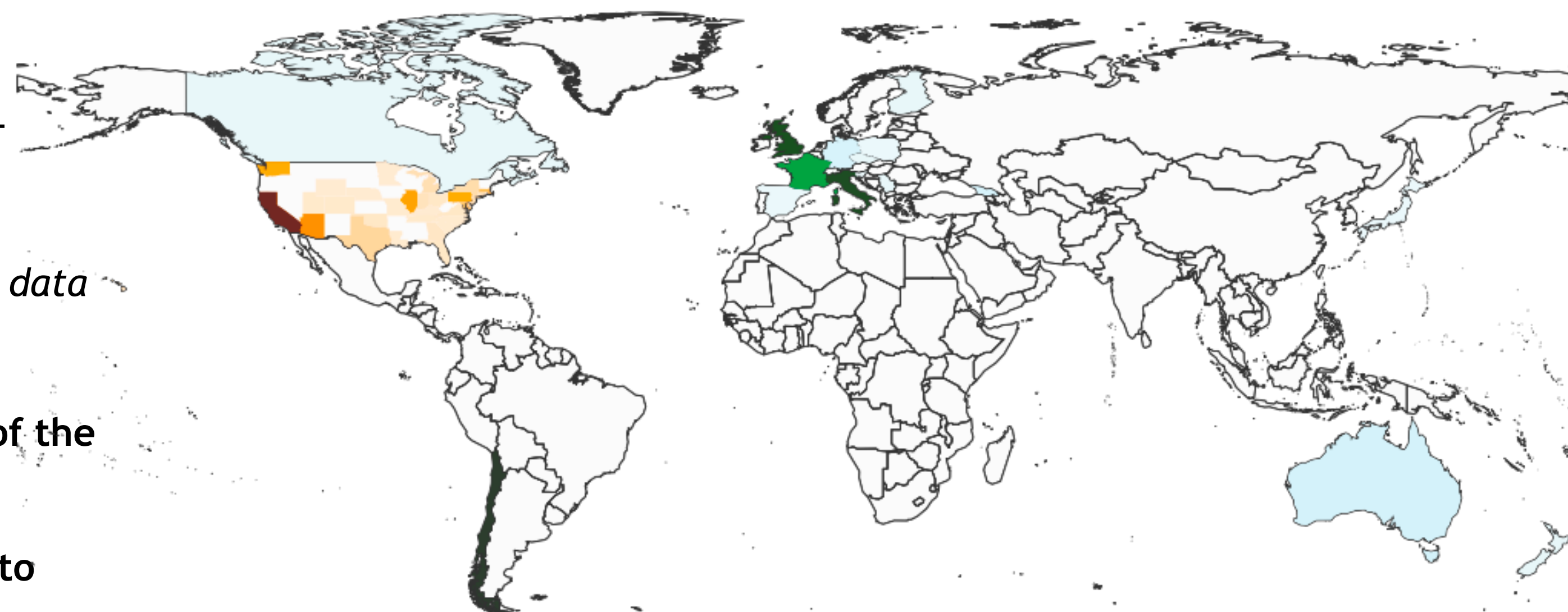
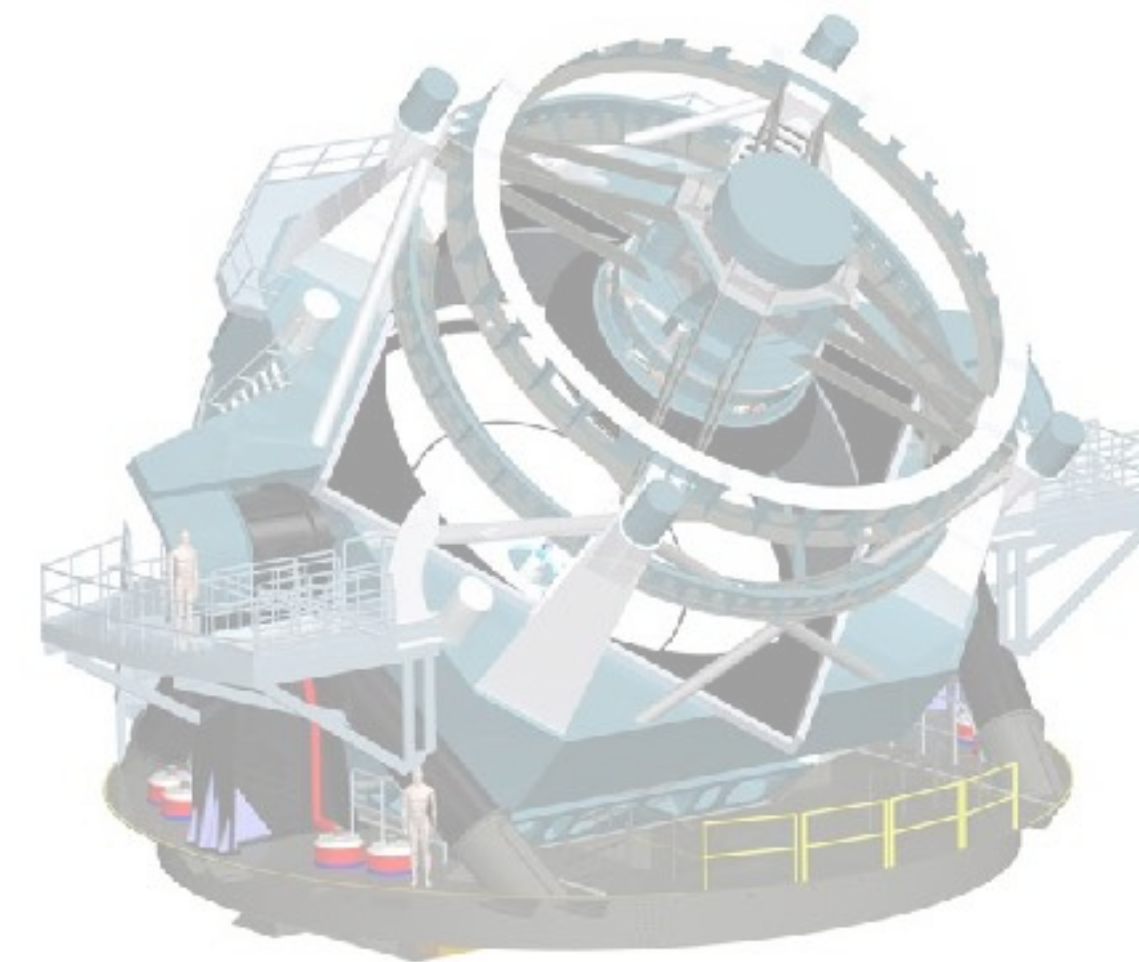
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California: 174
Washington: 88
Pennsylvania: 63

Chile 69
UK: 60
Italy: 60
France: 45

LSST Science Collaborations

Galaxies

Michael Cooper (UC Irvine)

Brant Robertson (University of California, Santa Cruz)

Stars, Milky Way, and Local Volume

John Bochanski (Rider University)

John Gizis (University of Delaware)

Nitya Jacob Kallivayalil (University of Virginia)

Solar System

Megan Schwamb (Gemini Observatory, Northern Operations Center)

David Trilling (Northern Arizona University)

Dark Energy

Eric Gawiser (Rutgers The State University of New Jersey)

Phil Marshall (KIPAC)

Active Galactic Nuclei

Niel Brandt (Pennsylvania State University)

Transients and variable stars

Federica Bianco (New York University)

Rachel Street (LCO)

Strong Lensing

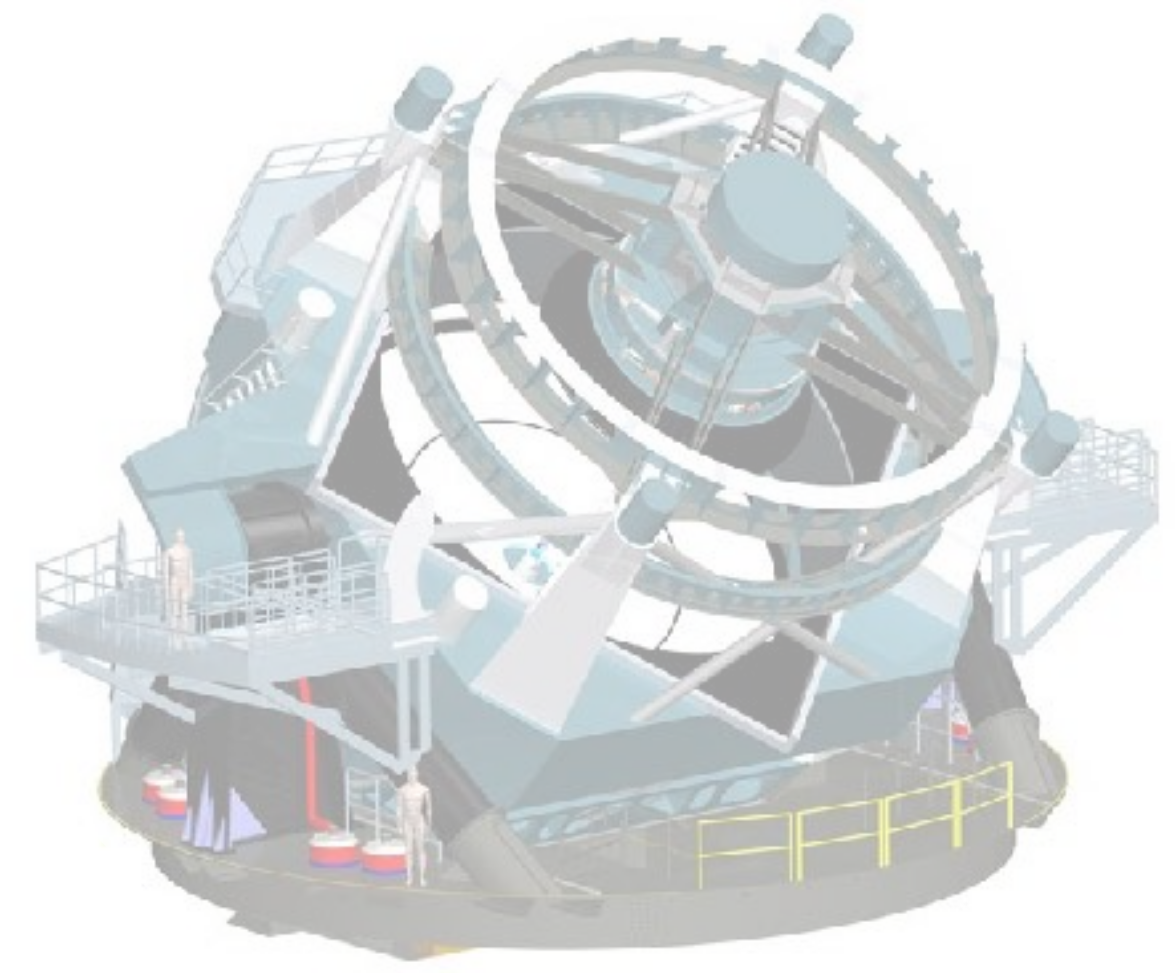
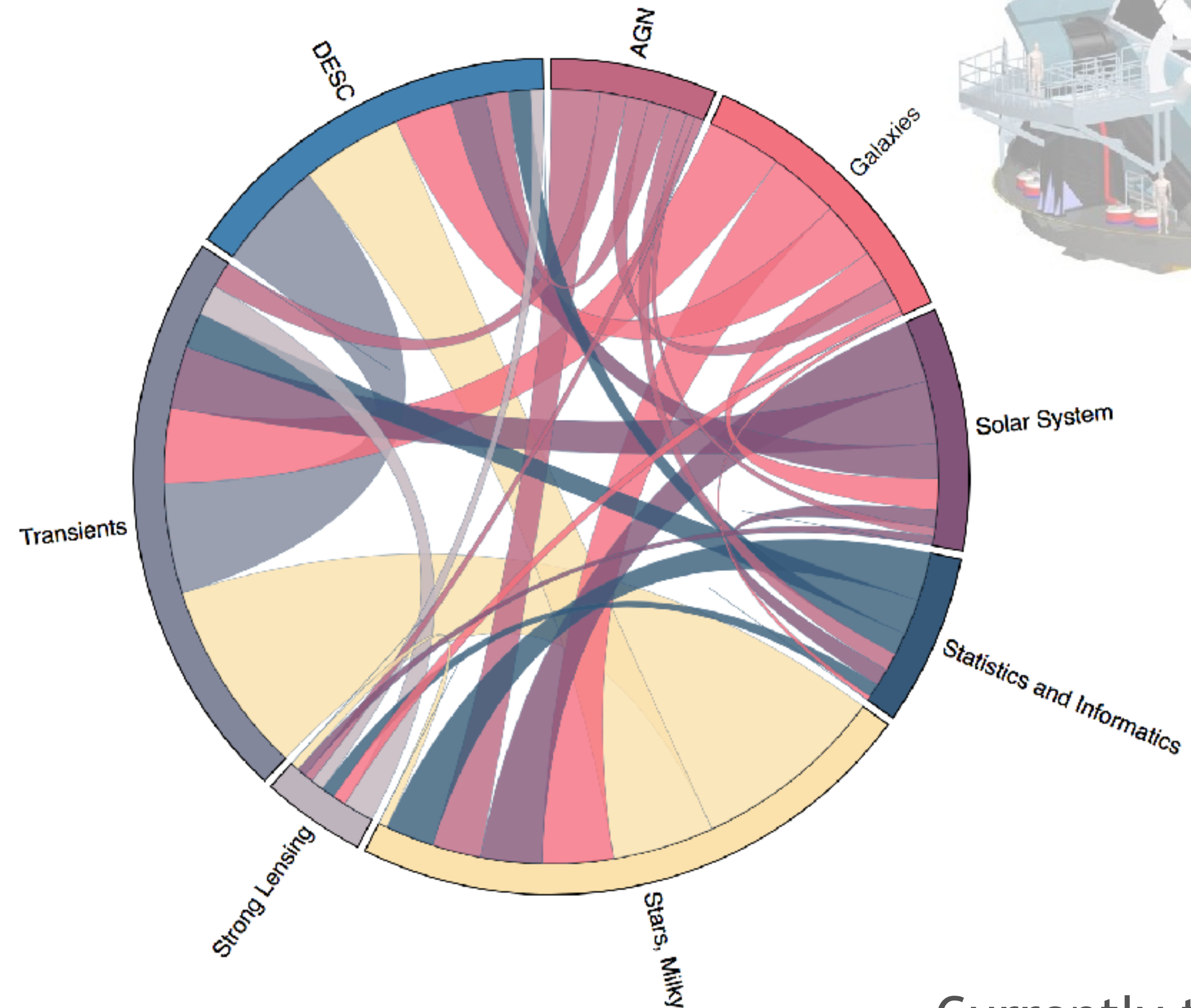
Charles Keeton (Rutgers-The State University of New Jersey)

Aprajita Verma (Oxford University)

Informatics and Statistics

Tom Loredi (Cornell University)

Chad Schafer (Carnegie Mellon University)



Currently there are 8 SCs
ranging in size from ~700 (DESC) to ~30 members

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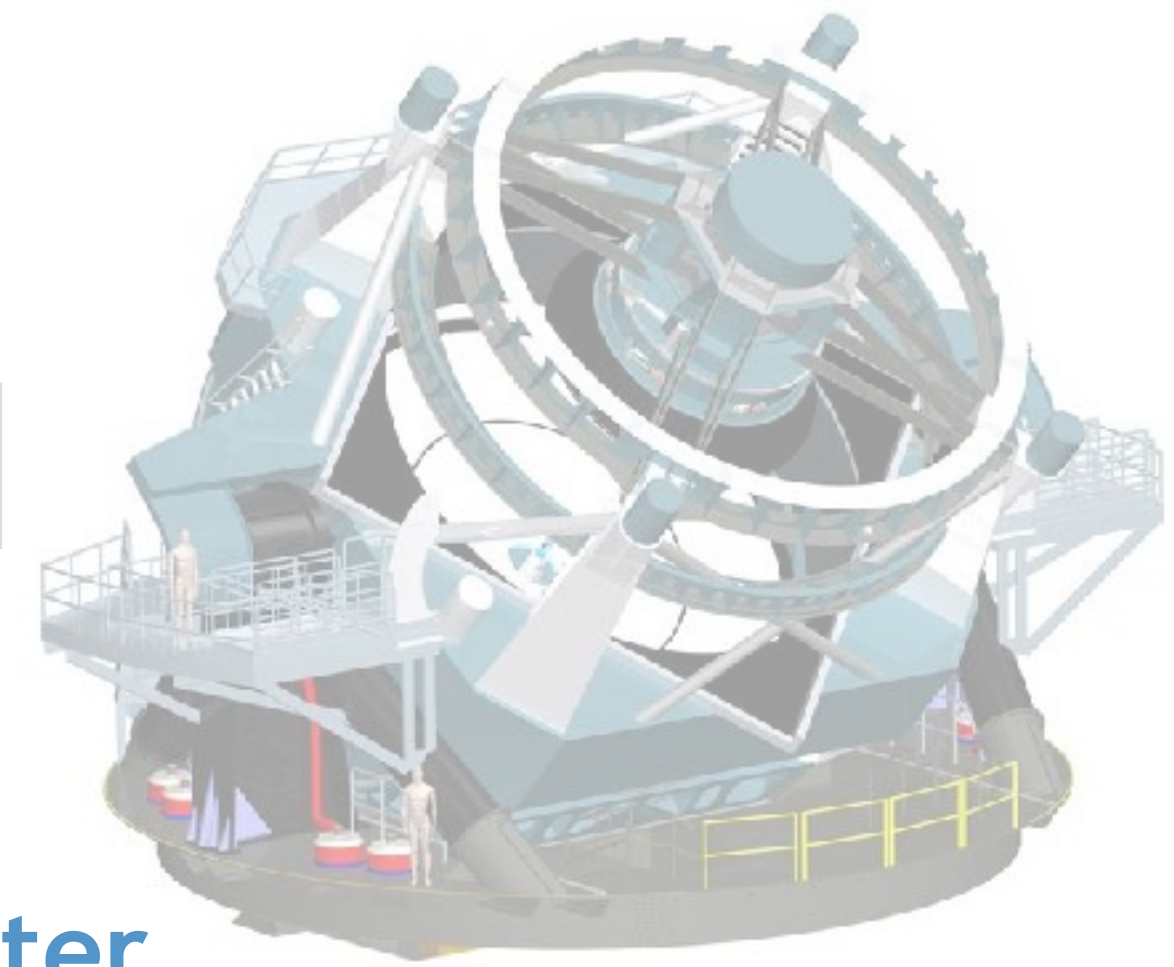
LSST's four key science areas

Dark energy and dark matter

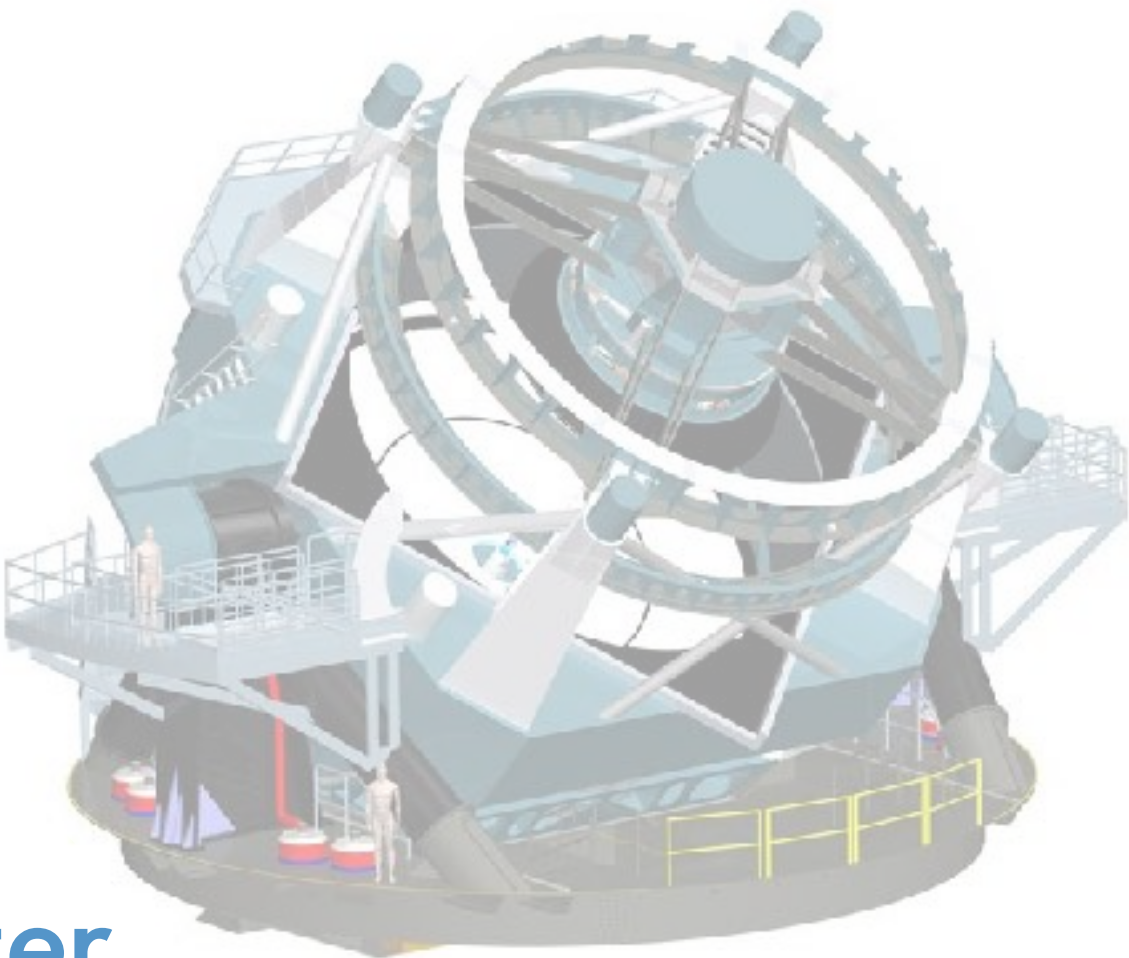
Mapping the Milky Way

Time domain science

Census of the Solar System



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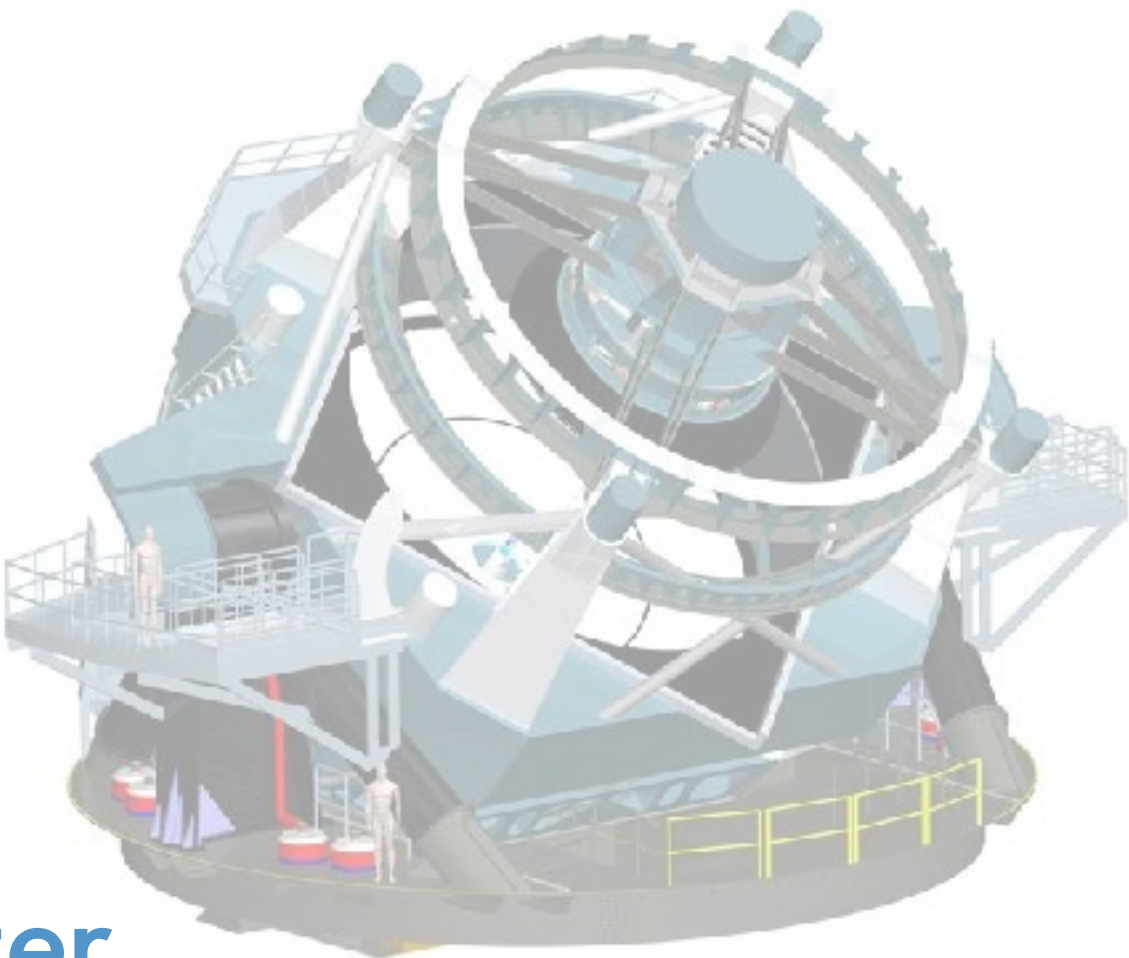
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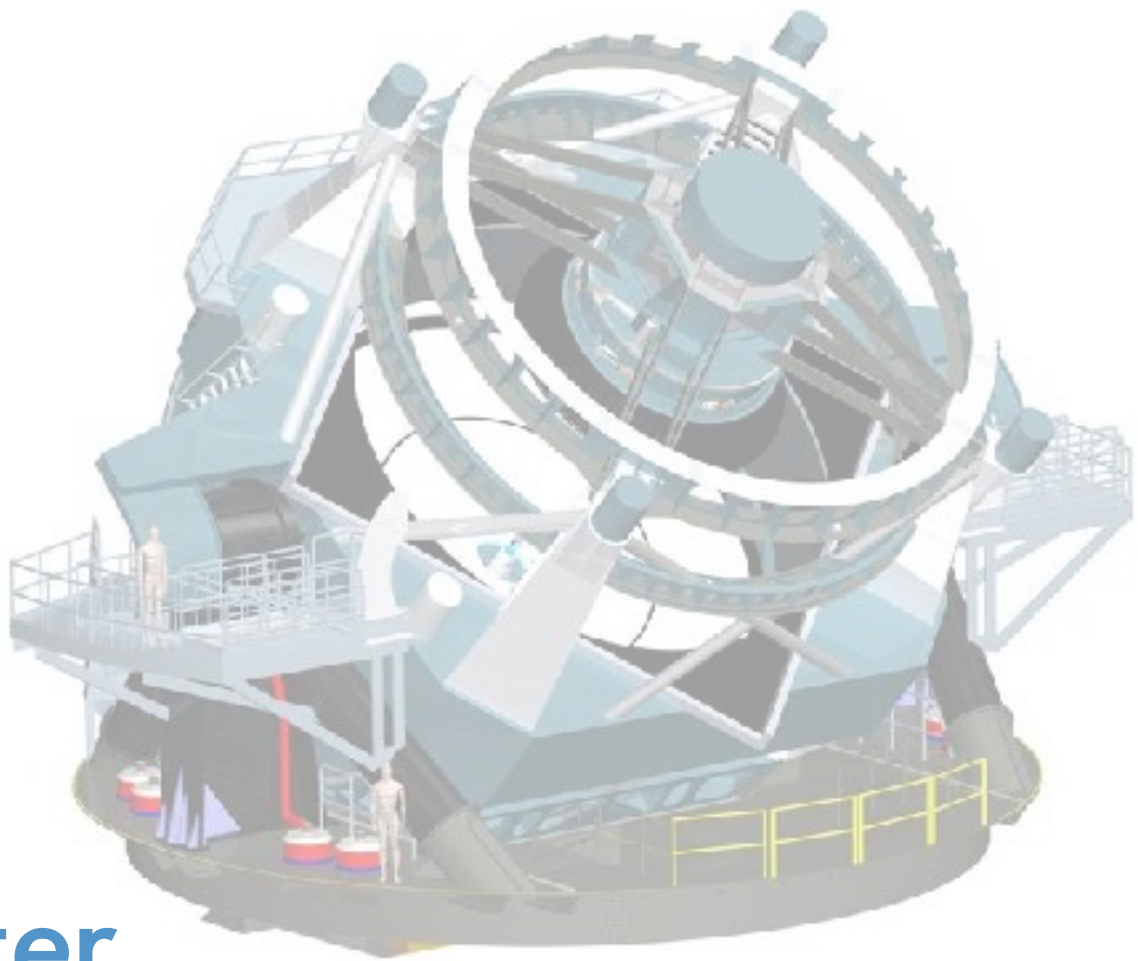
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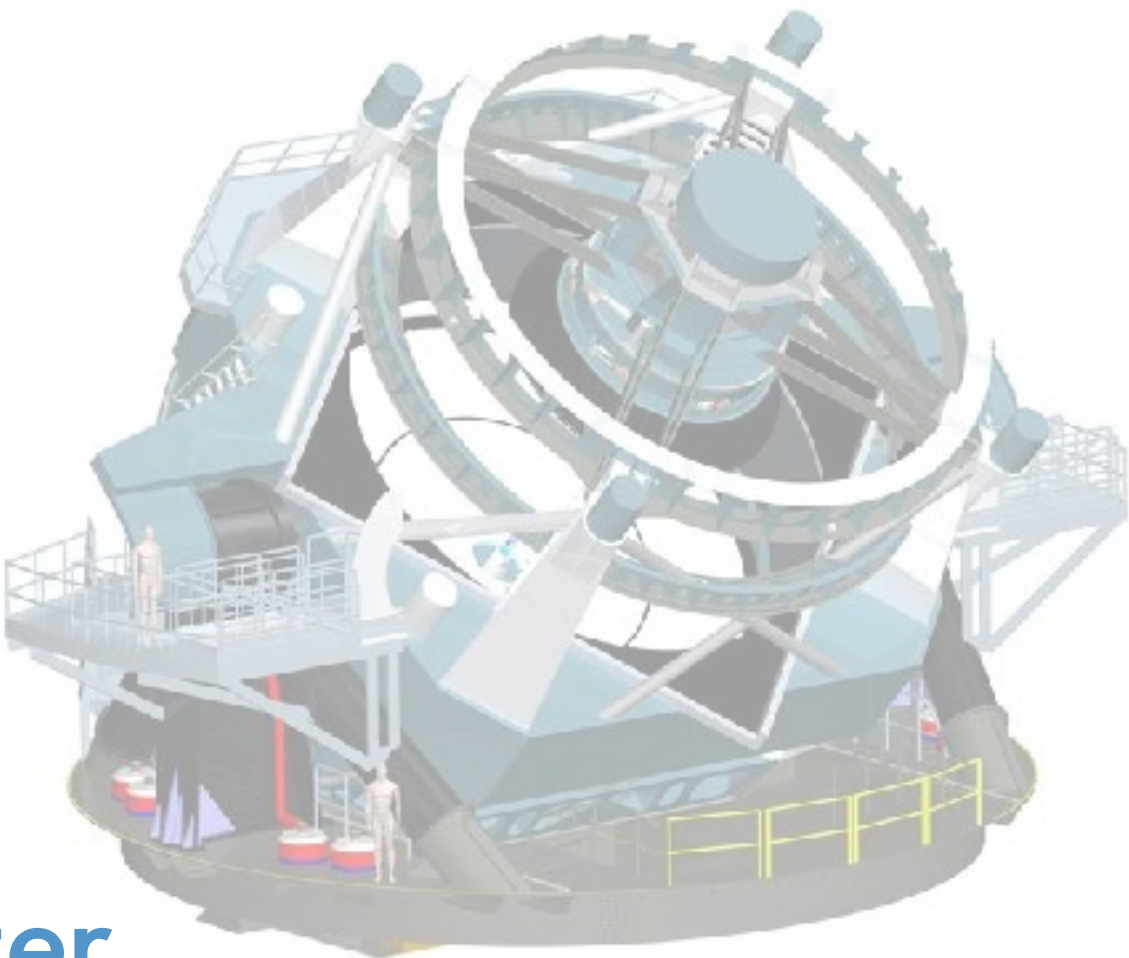
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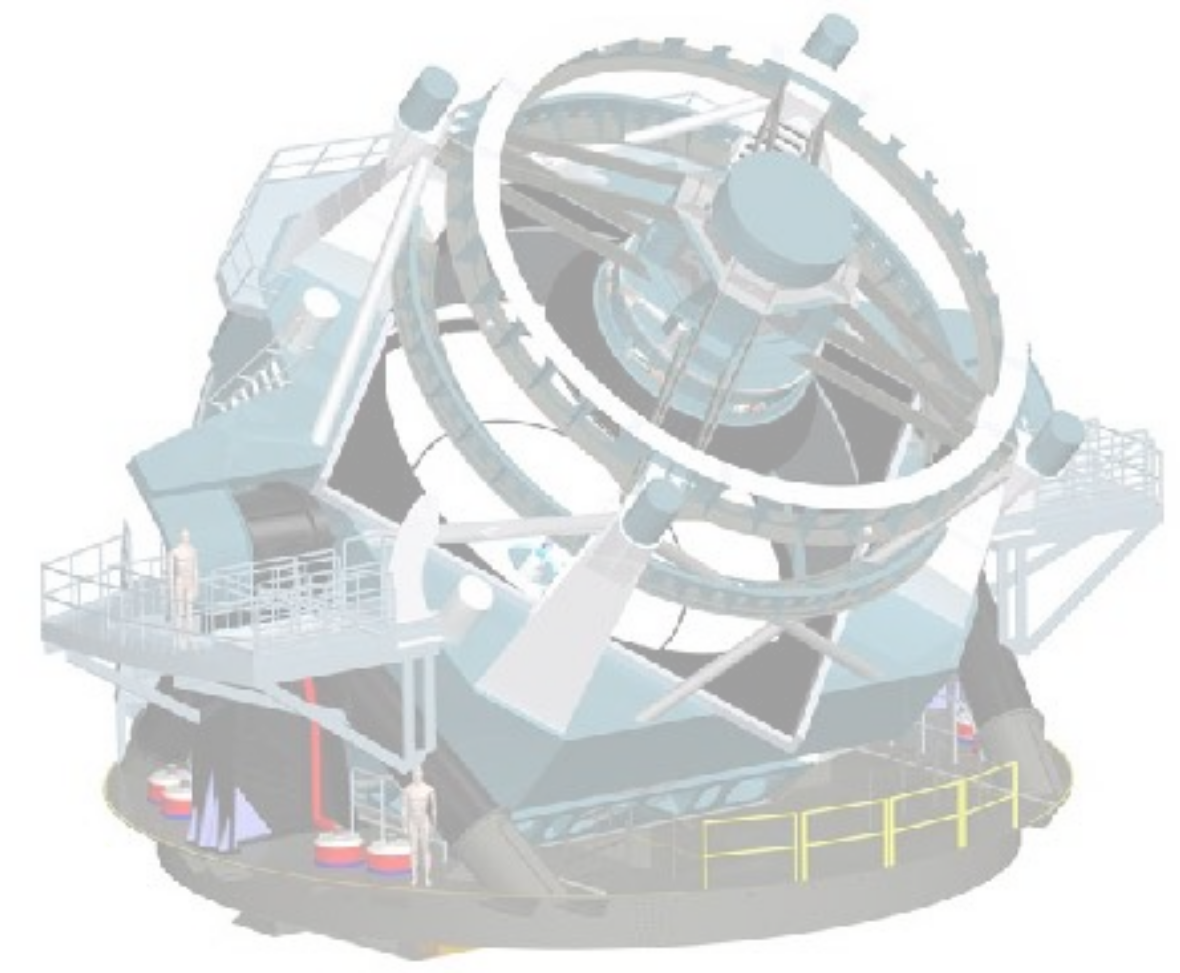


Why join an LSST Science Collaboration?

A forum to better understand how to prepare for the LSST age.

All SCs have a direct line of communication with the LSST Project to *ask questions* and *make recommendations*.

- Each SC has a DM liaison
- Regular meetings between LSST Project and SCs' chairs



LSST Community

Any opinions, statements (including statements about LSST and what it will deliver), or recommendations expressed on this forum are those of the author and do not necessarily reflect the views of the LSST Project.

Please take a moment to review our [community guidelines](#).

Science Collaborations ▾ all ▾ all tags ▾ Latest Bookmark

Topic Category

About the Science Collaborations category

Science discussions for members of LSST Science Collaborations. Use this category for discussions across all LSST Science Collaborations. If want the discussion to be visible to the public, use the general Science cate... [read more](#)

LSSTC

- # general
- # help-slack
- # jobs
- # lsst-project
- # lsstc-slack
- # msddfttvs
- # plasticc-metrics
- # scicollab-discuss
- # scicollchairs**
- # solarsystem

scicollchairs

☆ | 👤 17 | 📌 4 | ➕ Add a topic

Wednesday, May 16th

Zeljko Ivezic 6:32 AM

@channel I just sent a draft version of our upcoming call for white papers on LSST cadence optimization to your email exploder (lsst-science-working-group@lsstcorp.org).

Thursday, May 17th

federica bianco 8:39 PM

Hi @channel - a reminder that LSSTC supports travel for 1 chair for each SC to attend the LSST2018 August meeting <https://project.lsst.org/meetings/lsst2018/content/lsst2018-project-and-community-workshop>

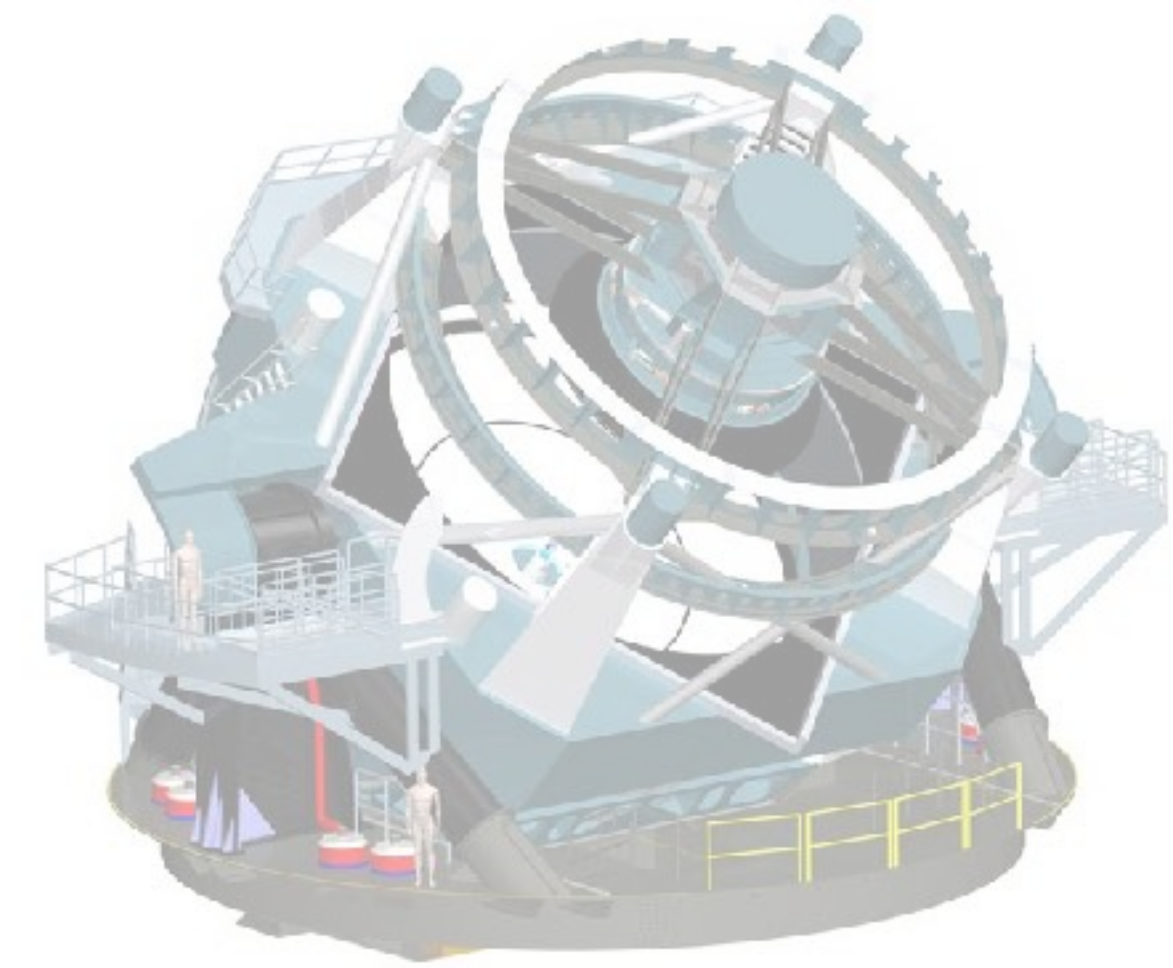
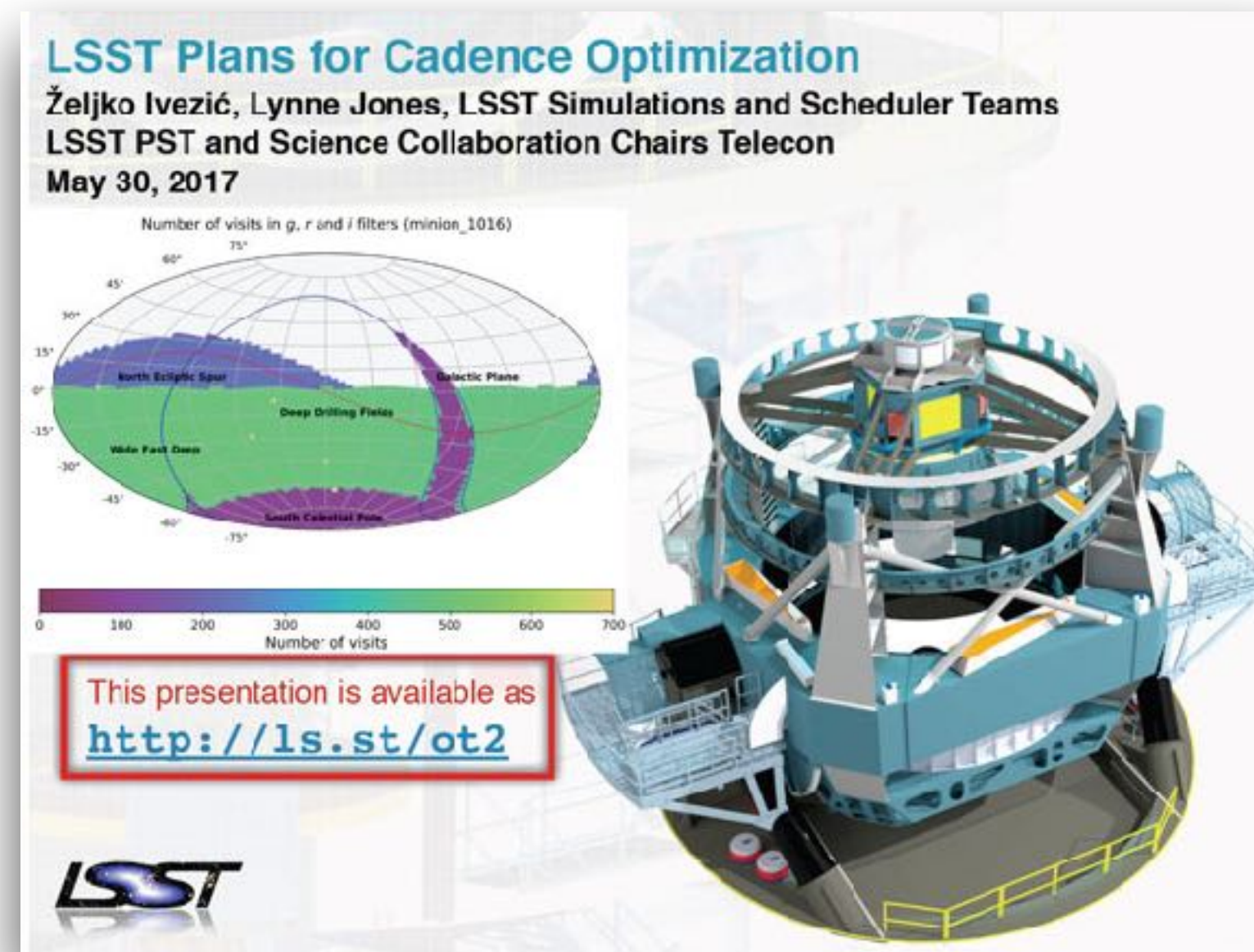
2 replies Last reply 24 days ago

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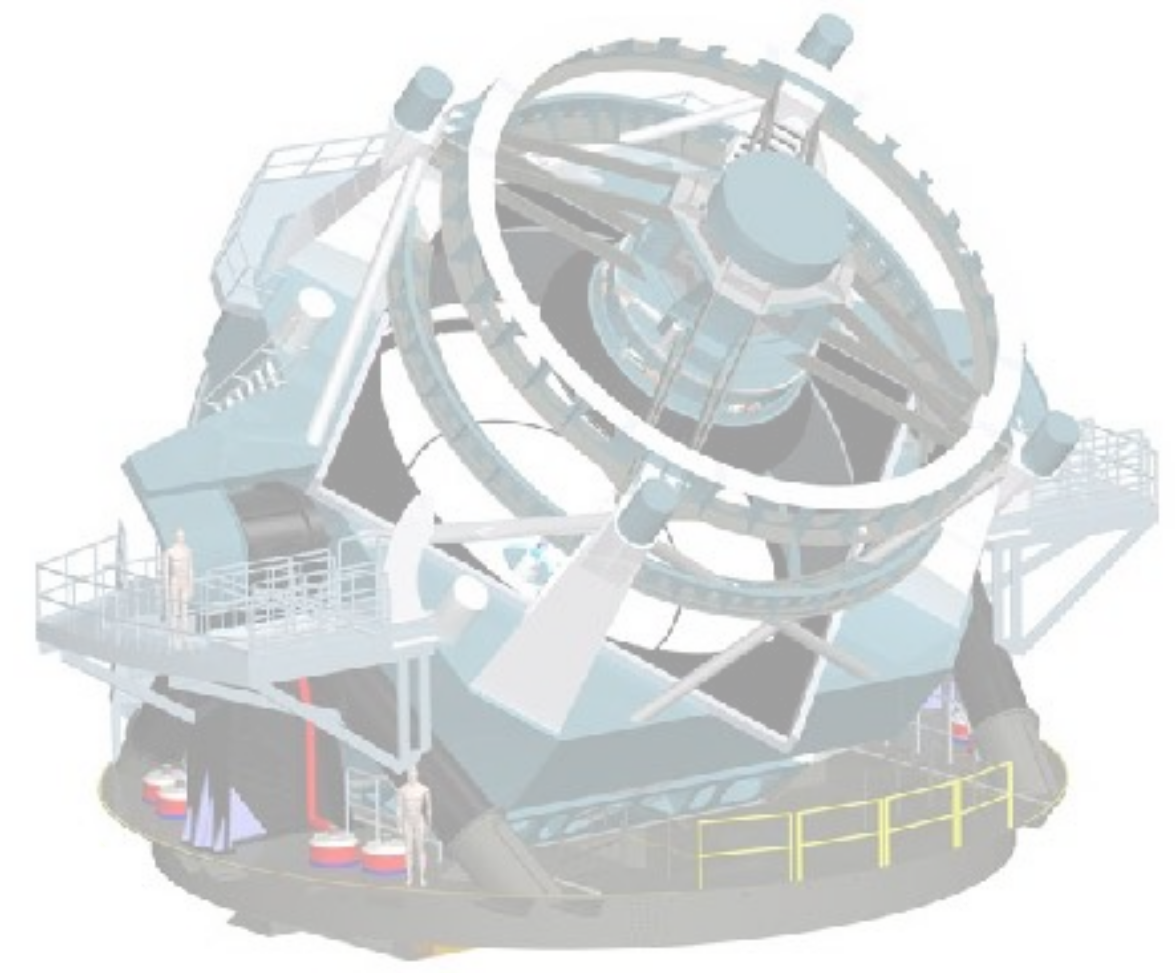
- Each SC has a DM liaison
- Regular meetings between LSST Project and SCs' chairs
- LSST Data Rights and Access plans - Beth Willman
- Astrometric Pipelines and Data Products - Jim Bosch
- Photometric Products - Robert Lupton
- LSST Pipelines and Data Products - Jim Bosch
- LSST Project Status - Victor Krabbendam
- Status of the LSST Image Simulations - Chris Walter
- LSST Education and Public Outreach - Amanda Bauer
- The LSST Science Platform - Mario Juric
- LSST Observing Strategy - Zeljko Ivezić
- DM Plans for Crowded Star Fields - Jim Bosch
- OpSim Development - Andy Connolly
- LSST Commissioning Overview and Data Plan - C. Claver and B. Willman



<https://www.lsst.org/scientists>

Plans for Crowded Stellar Fields
Jim Bosch, Data Release Production Scientist

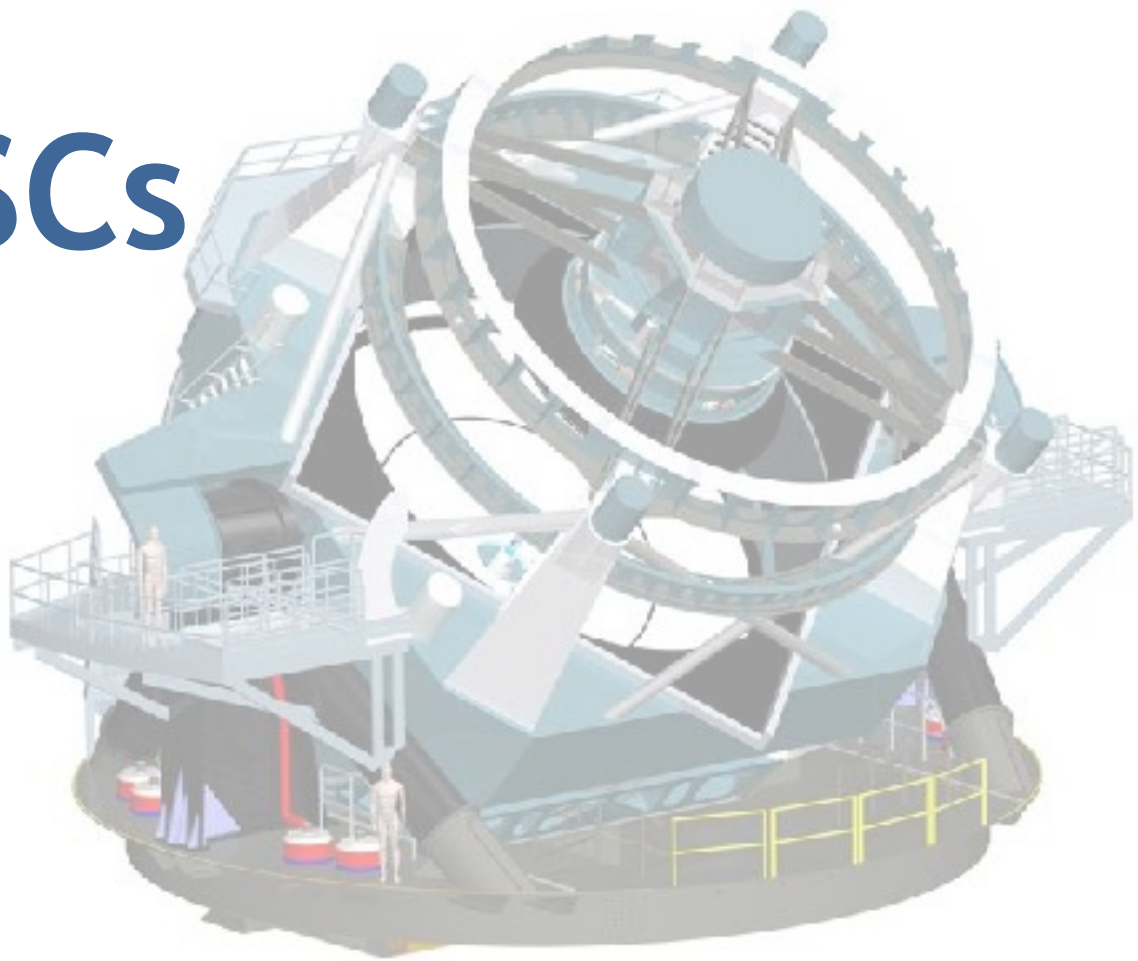
LSST
Large Synoptic Survey Telescope



LSST Science Collaborations' current activities

*Road Maps, Charters,
Cadence Optimization, DDF and Minisurvey proposals
Data Simulations, creation of User Generated Data Products*

LSST constrained optimization problem and the SCs



Science-Driven Optimization of the LSST Observing Strategy

Prepared by the LSST Science Collaborations,
with support from the LSST Project.

Version 1.0

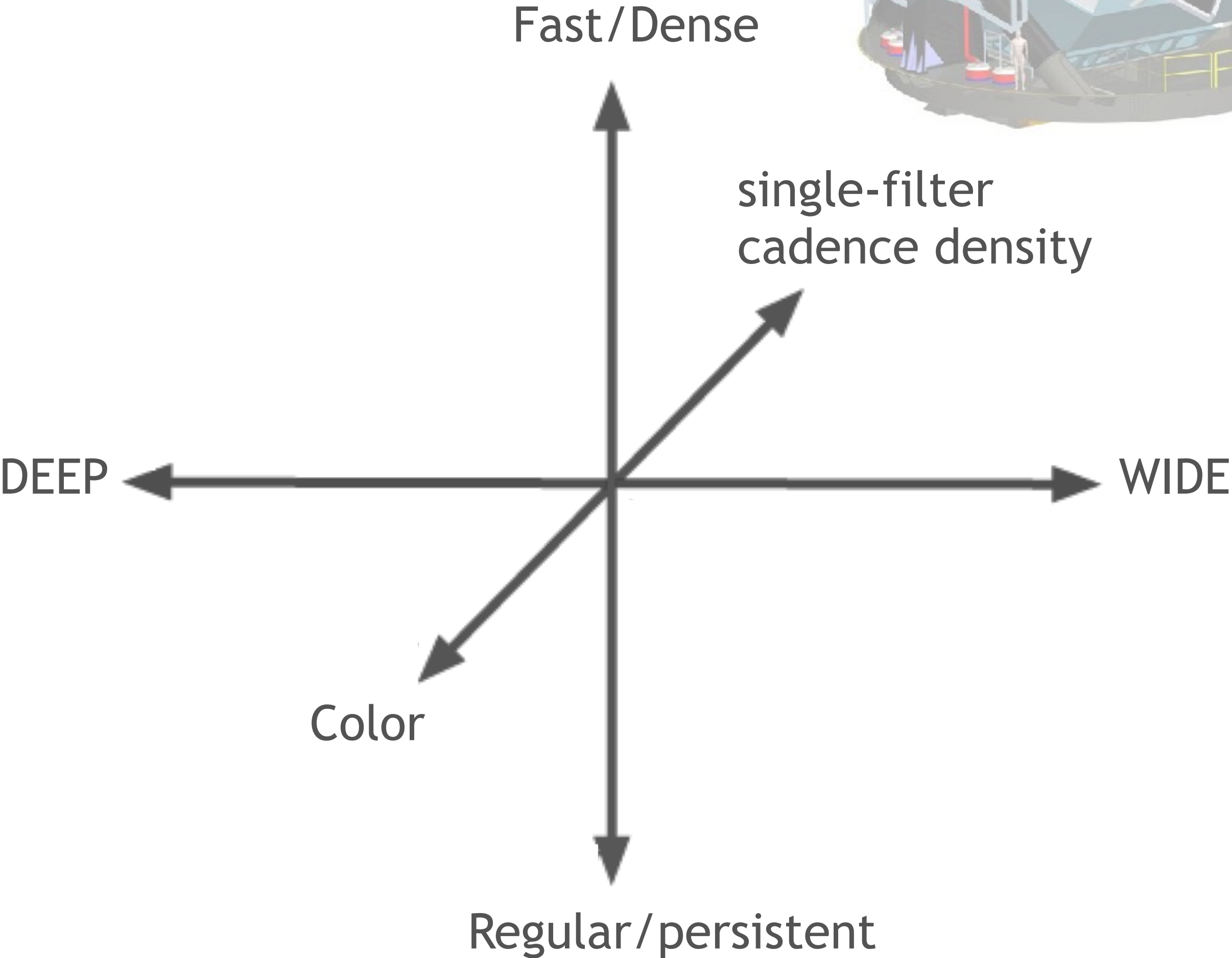
Most recent commit: [fe3d2ad](#)

(Mon, 14 Aug 2017 02:08:33 -0700)

Contributing Authors

Phil Marshall,¹ Timo Anguita,² Federica B. Bianco,³ Eric C. Bellm,⁴ Niel Brandt,⁵ Will Clarkson,⁶ Andy Connolly,⁷ Eric Gawiser,⁸ Željko Ivezić,⁹ Lynne Jones,¹⁰ Michelle Lochner,¹¹ Michael B. Lund,¹² Ashish Mahabal,¹³ David Nidever,¹⁴ Knut Olsen,¹⁵ Stephen Ridgway,¹⁶ Jason Rhodes,¹⁷ Ohad Shemmer,¹⁸ David Trilling,¹⁹ Kathy Vivas,²⁰ Lucianne Walkowicz,²¹ Beth Willman,²² Peter Yoachim,²³ Scott Anderson,²⁴ Pierre Antilogus,²⁵ Ruth Angus,²⁶ Iair Arcavi,²⁷ Humna Awan,²⁸ Rahul Biswas,²⁹ Keaton J. Bell,³⁰ David Bennett,³¹ Chris Britt,³² Derek Buzasi,³³ Dana I. Casetti-Dinescu,³⁴ Laura Chomiuk,³⁵ Chuck Claver,³⁶ Kem Cook,³⁷ James Davenport,³⁸ Victor Debattista,³⁹ Seth Digel,⁴⁰ Zoheyr Doctor,⁴¹ R. E. Firth,⁴² Ryan Foley,⁴³ Wen-fai Fong,⁴⁴ Lluís Galbany,⁴⁵ Mark Giampapa,⁴⁶ John E. Gizis,⁴⁷ Melissa L. Graham,⁴⁸ Carl Grillmair,⁴⁹ Phillipe Gris,⁵⁰ Zoltan Haiman,⁵¹ Patrick Hartigan,⁵² Suzanne Hawley,⁵³ Renée Hlozek,⁵⁴ Saurabh W. Jha,⁵⁵ C. Johns-Krull,⁵⁶ Shashi Kanbur,⁵⁷ Vassiliki Kalogera,⁵⁸ Vinay Kashyap,⁵⁹ Vishal Kasliwal,⁶⁰ Richard Kessler,⁶¹ Alex Kim,⁶² Peter Kurczynski,⁶³ Ofer Lahav,⁶⁴ Michael C. Liu,⁶⁵ Alex Malz,⁶⁶ Raffaella Margutti,⁶⁷ Tom Matheson,⁶⁸ Jason D. McE Pergrine McGehee,⁷⁰ Søren Meibom,⁷¹ Josh Meyers,⁷² Dave Monet,⁷³ Eric Neilsen,⁷⁴ Jeffrey Newman,⁷⁵ Matt O'Dowd,⁷⁶ Hiranya V. Peiris,⁷⁷ Matthew T. Penny,⁷⁸ Christina Peters,⁷⁹ Radosław P. Kara Ponder,⁸¹ Gordon Richards,⁸² Jeonghee Rho,⁸³ David Rubin,⁸⁴ Samuel Schmidt,⁸⁵ Robert L. Schuhmann,⁸⁶ Avi Shporer,⁸⁷ Colin Slater,⁸⁸ Nathan Smith,⁸⁹ Marcelles Soares-Santos,⁹⁰ Keivan Stassun,⁹¹ Jay Strader,⁹² Michael Strauss,⁹³ Rachel Street,⁹⁴ Christopher Stubbs,⁹⁵ Mark Sullivan,⁹⁶ Paula Szkody,⁹⁷ Virginia Trimble,⁹⁸ Tony Tyson,⁹⁹ Miguel de Val-Borro,¹⁰⁰ Stefano Valenti,¹⁰¹ Robert Wagoner,¹⁰² W. Michael Wood-Vasey,¹⁰³ Bevin Ashley Zauderer,¹⁰⁴

A graphical representation of the contributions made to this white paper can be found on this paper's [GitHub repository](#).





LSST Solar System SC

Large Synoptic Survey Telescope Solar System Science Roadmap

1 MEGAN E. SCHWAMB,¹ R. LYNNE JONES,² STEVEN R. CHESLEY,³ ALAN FITZSIMMONS,⁴ WESLEY C. FRASER,⁴ MATTHEW J. HOLMAN,⁵ HENRY HSIEH,⁶ DARIN RAGOZZINE,⁷ CRISTINA A. THOMAS,^{6,8} DAVID E. TRILLING,⁸ MICHAEL E. BROWN,⁹ MICHELE T. BANNISTER,⁴ DENNIS BODEWITS,¹⁰ MIGUEL DE VAL-BORRO,^{11,12} DAVID GERDES,¹³ MIKAEL GRANVIK,¹⁴ MICHAEL S. P. KELLEY,¹⁰ MATTHEW M. KNIGHT,¹⁵ LESLIE A. YOUNG,¹⁶ ON BEHALF OF THE LSST SOLAR SYSTEM SCIENCE COLLABORATION

(Published February 7, 2018 - Version 1.0)

ABSTRACT

The Large Synoptic Survey Telescope (LSST) is uniquely equipped due to its unprecedented combination of depth and wide field of view. In 2022, LSST will generate the largest catalog of Solar System objects. The LSST Solar System Science Collaboration (SSSC) is to facilitate the study of the planets and small body populations residing within the Solar System. To prepare for future survey cadence decisions and ensure that the science is achievable with LSST, the SSSC has identified areas for investigation with LSST in this roadmap. The roadmap is a living document that will inform LSST survey cadence decisions and the pipelines needed to be developed by the planetary community before the planned start of LSST science operations.

Keywords: editorials, notices — miscellaneous — catalogs —

7 pages

LSST Dark Energy SC
Large Synoptic Survey Telescope
Dark Energy Science Collaboration

Version 2.0

October 31, 2012

Prepared by the LSST Dark Energy Science Collaboration

This white paper describes the LSST Dark Energy Science Collaboration (DESC), whose goal is the study of dark energy and related topics in fundamental physics with data from the Large Synoptic Survey Telescope (LSST). It provides an overview of dark energy science and describes the current and anticipated state of the field. It makes the case for the DESC by laying out a robust analytical framework for dark energy science that has been defined by its members and the comprehensive three-year work plan they have developed for implementing that framework. The analysis working groups cover five key probes of dark energy: weak lensing, large scale structure, galaxy clusters, Type Ia supernovae, and strong lensing. The computing working groups span cosmological simulations, galaxy catalogs, photon simulations and a systematic software and computational framework for LSST dark energy data analysis. The technical working groups make the connection between dark energy science and the LSST system. The working groups have close linkages, especially through the use of the photon simulations to study the impact of instrument design and survey strategy on analysis methodology and cosmological parameter estimation. The white paper describes several high priority tasks identified by each of the 16 working groups. Over the next three years these tasks will help prepare for LSST analysis, make synergistic connections with ongoing cosmological surveys and provide the dark energy community with state of the art analysis tools. Members of the community are invited to join the DESC, according to the membership policies described in the white paper. Applications to sign up for associate membership may be made by submitting the Web form at <http://www.slac.stanford.edu/exp/lsst/DESC/signup.html> with a short statement of the work they wish to pursue that is relevant to the DESC.

133 pages

LSST Galaxies SC

Large Synoptic Survey Telescope
Galaxies Science Roadmap

Cooper, Michael C.³, Davies, Roger⁴, Driver, Simon P.⁵, Ferguson, David W.⁶, Wiser, Eric⁸, Kaviraj, Sugata⁹, Knapen, Johan H.^{10,11}, Lintott, Chris⁴, Norman, Dara J.¹³, Padilla, Nelson¹⁴, Schmidt, Samuel J.¹⁵, Smith, Richard¹⁶, Aprajita⁴, Zehavi, Idit¹⁷, Armus, Lee¹⁸, Avestruz, Camille¹⁹, A. A.⁴, Bremer, Malcolm N.²⁰, Conselice, Christopher J.²¹, Davies, Mark E.¹³, Galaz, Gaspar¹⁴, Grazian, Andrea²⁴, Holwerda, Benne^{27,28,29}, Lacerna, Ivan^{30,14}, Loveday, Jon³¹, Marshall, Phil³², Merlin, Michael³³, Thomas H.¹⁴, Robotham, Aaron⁵, Salim, Samir³⁴, Sereno, Mauro³⁵, Scera, Patricia B.³⁷, Werner, Norbert^{38,39,40}, Yoachim, Peter⁴¹, Borne, Kees de⁴², Members of the LSST Galaxies Science Collaboration

The *Galaxies Science Roadmap* represents the collective efforts of more than 100 scientists from around the world. We thank the LSST Corporation for their support in developing this Roadmap and for making it possible to do so more broadly. We also wish to thank the LSST Galaxies Science Collaboration for their years in developing the case for extragalactic science with LSST.

For more information, content can be addressed to Brant Robertson (brant@ucsc.edu) and the LSST (lsst-galaxies@lsstcorp.org).

57 pages

arXiv:1802.01783v1 [astro-ph.EP] 6 Feb 2018

arXiv:1211.0310v1 [astro-ph.CO] 1 Nov 2012

Aug 2017

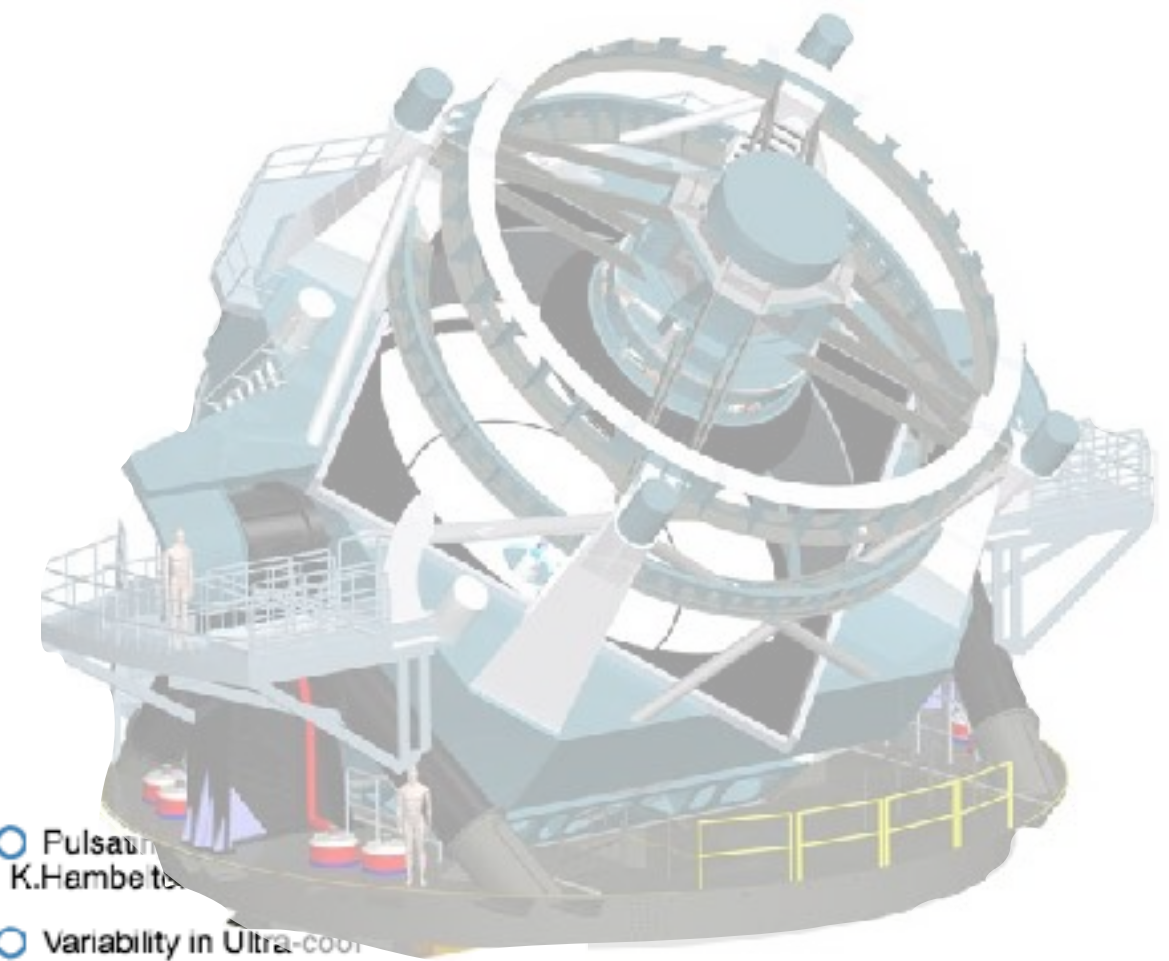
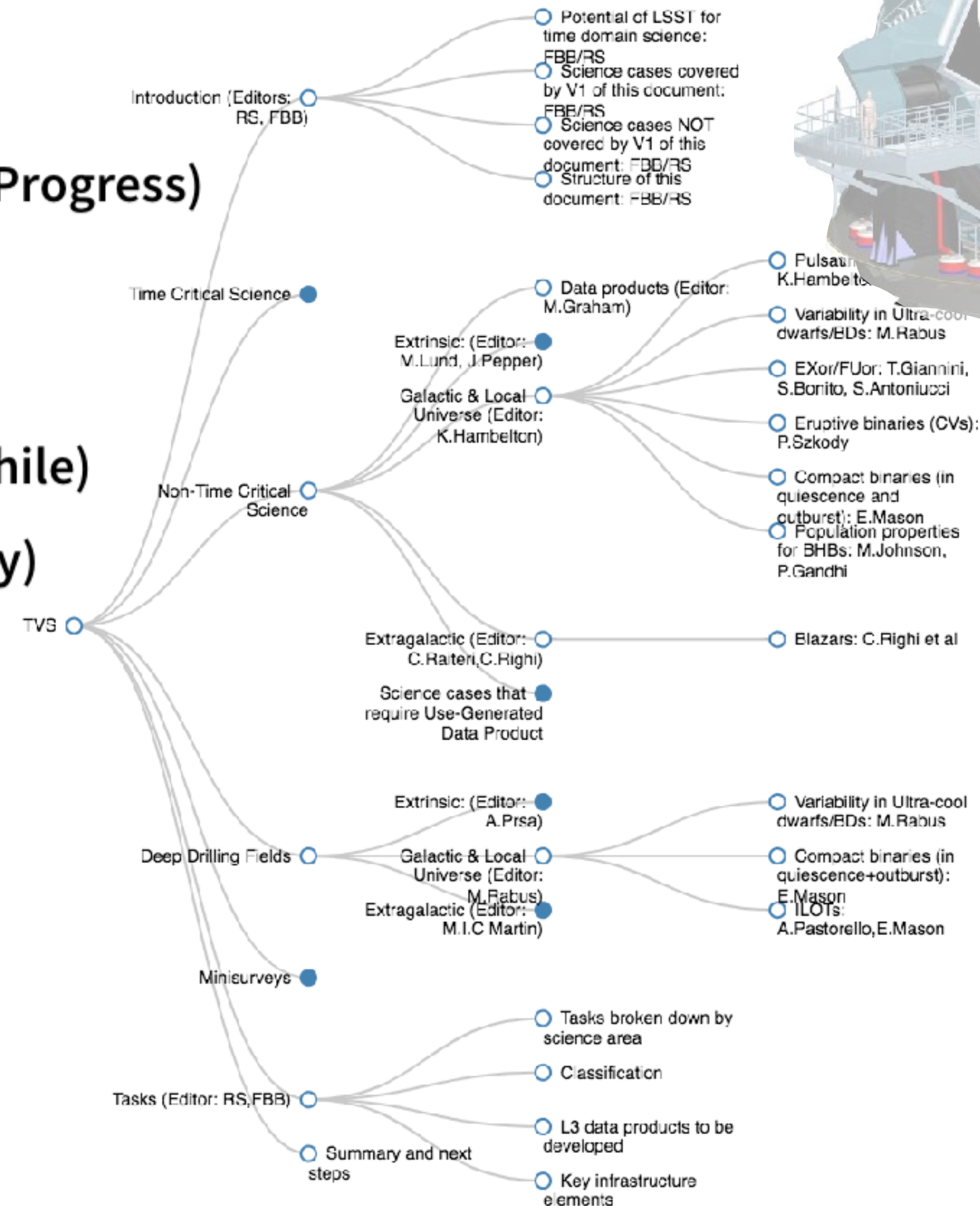


SC RoadMaps

LSST TVS RoadMap Document (Draft in progress)

- FB Federica B Bianco** (NYU Center for Urban Science & Progress)
- RS Rachel Street**
- PS Paula Szkody** (University of Washington)
- K Kmhambleton** (Villanova University)
- M Moniez** (LAL)
- JP Joshua Pepper** (Lehigh University)
- M Markus.Rabus** (Pontificia Universidad Catolica de Chile)
- KB Keaton Bell**
- MG Melissa L. Graham** (University of California, Berkeley)
- ML Mike Lund**
- C Chiara.Righi**
- R Raiteri**
- AP Andrej Prsa**
- M Maribel**
- B Balmaverde**
- E Enzo.Brocato**

<https://www.authorea.com/users/45/articles/281328-outline-of-lsst-tvs-roadmap-document>



LSST User Generated data products

Recognizing the diversity of astronomical community needs, and the need for specialized processing not part of the automatically generated LSST products, LSST plans to devote 10% of its data management system capabilities to ***User Generated*** data products

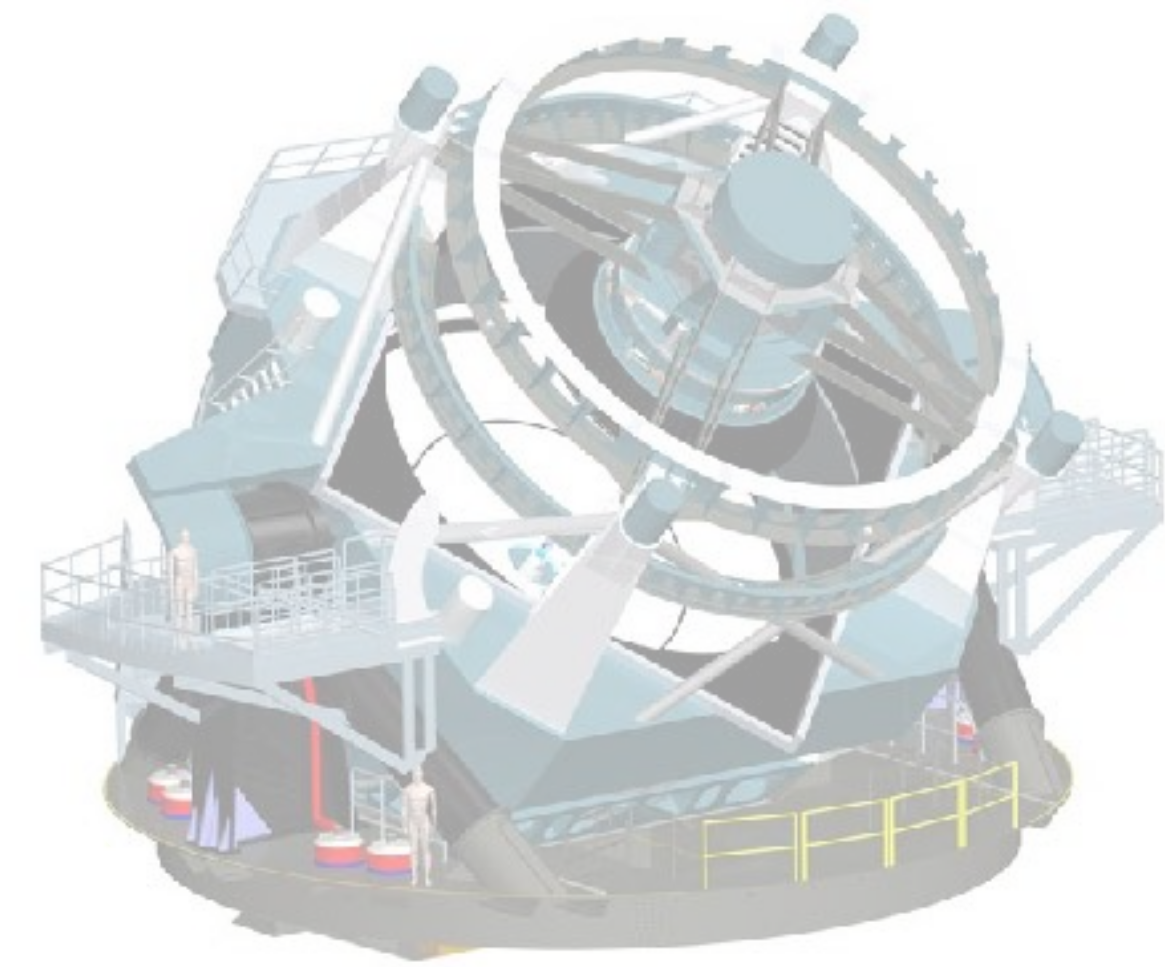
- A stream of ~10 million time-domain events per night, detected and transmitted to event distribution networks within 60 seconds of observation.
- A catalog of orbits for ~6 million bodies in the Solar System.
- A catalog of ~37 billion objects (20B galaxies, 17B stars), ~7 trillion observations (“sources”), and ~30 trillion measurements (“forced sources”), produced annually, accessible through online databases.
- Deep co-added images.

SCs are designing data products and generating pipelines to be processed in the LSST computational environments

Prompt

Data
Releases

User
Generate



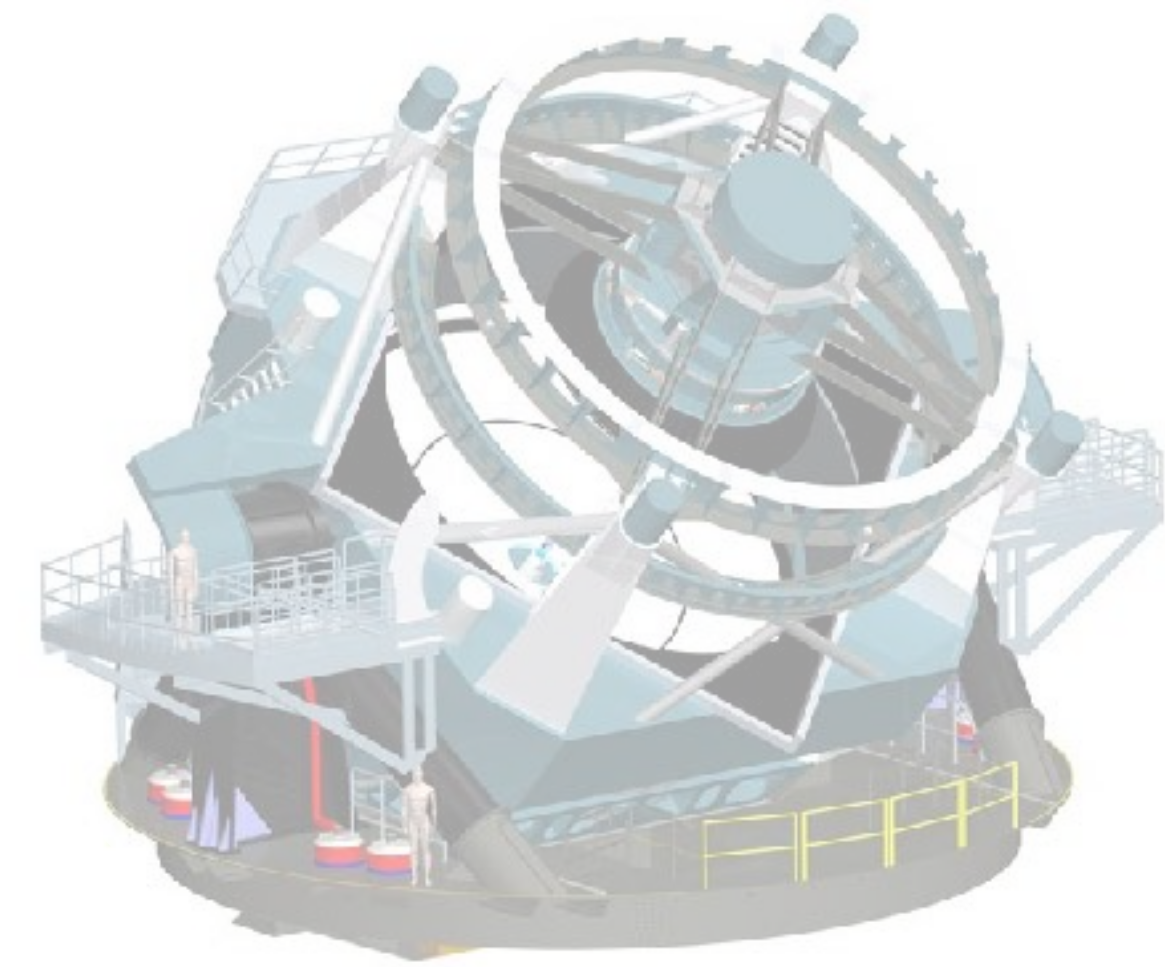
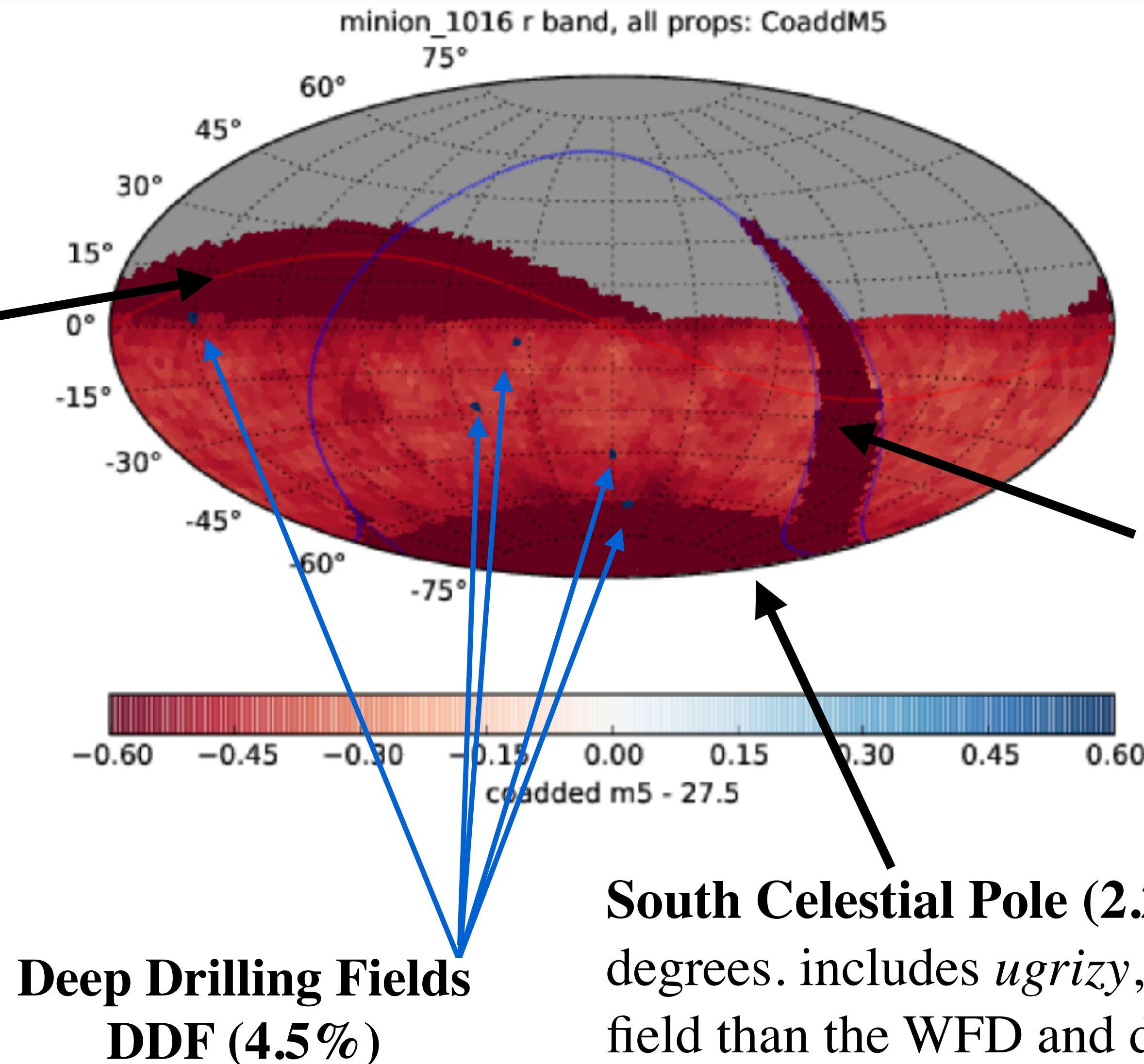
Data Products Definition Document
<http://ls.st/dpdd>

LSST WP call for proposal

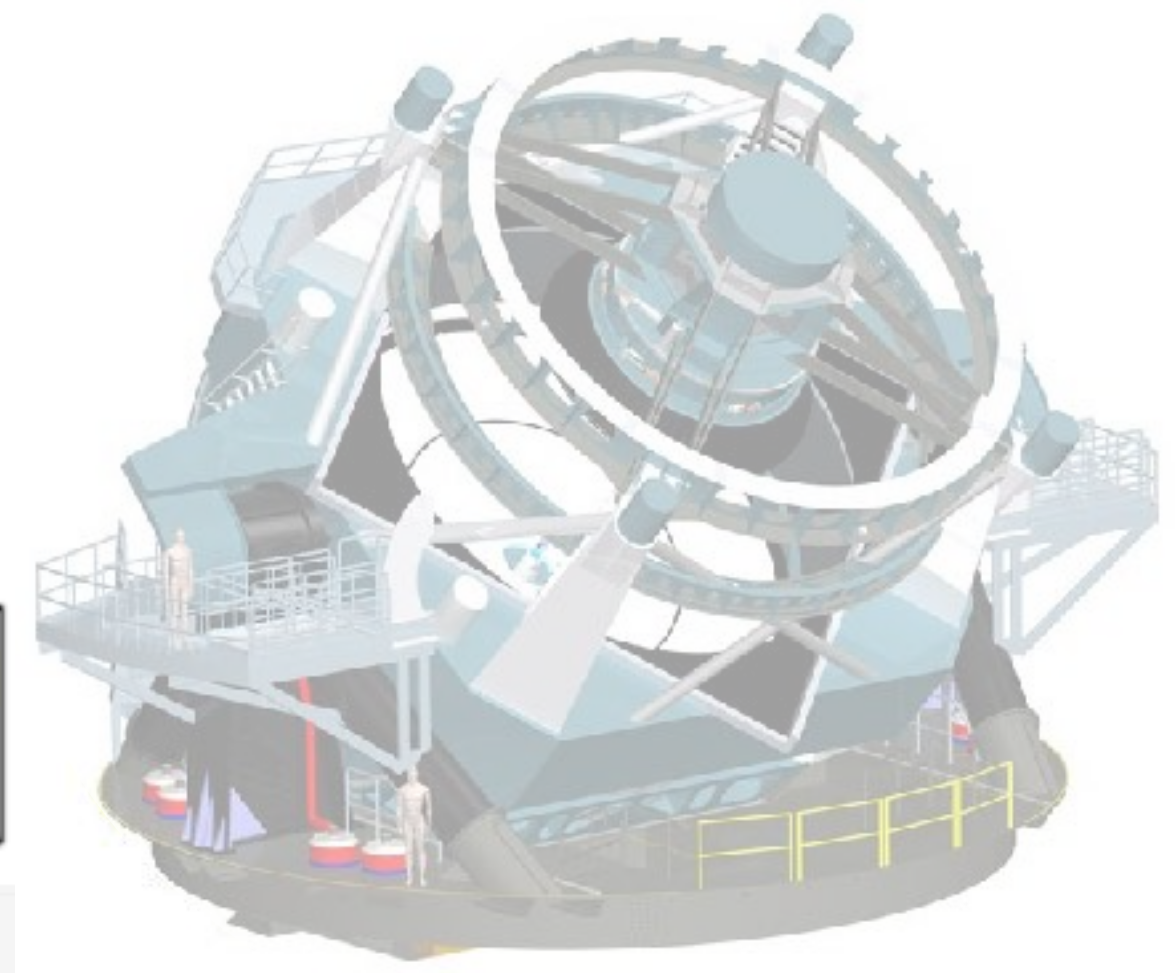
North Ecliptic Survey

The NES is an extension to reach the Ecliptic at higher airmass than the WFD survey typically covers, no u

Wide-Deep-Fast (85.1%)



LSST Science Collaborations' current activities



Dark Energy

Eric Gawiser (Rutgers)
Phil Marshall (KIPAC)

Current Focus:

- *Data Challenges*
- *crowded field photometry,*
- *synergy with other missions*
e.g. Scientific Synergy bw LSST&Euclid
arXiv:1710.08489

Working groups:

Computing and Simulation WG

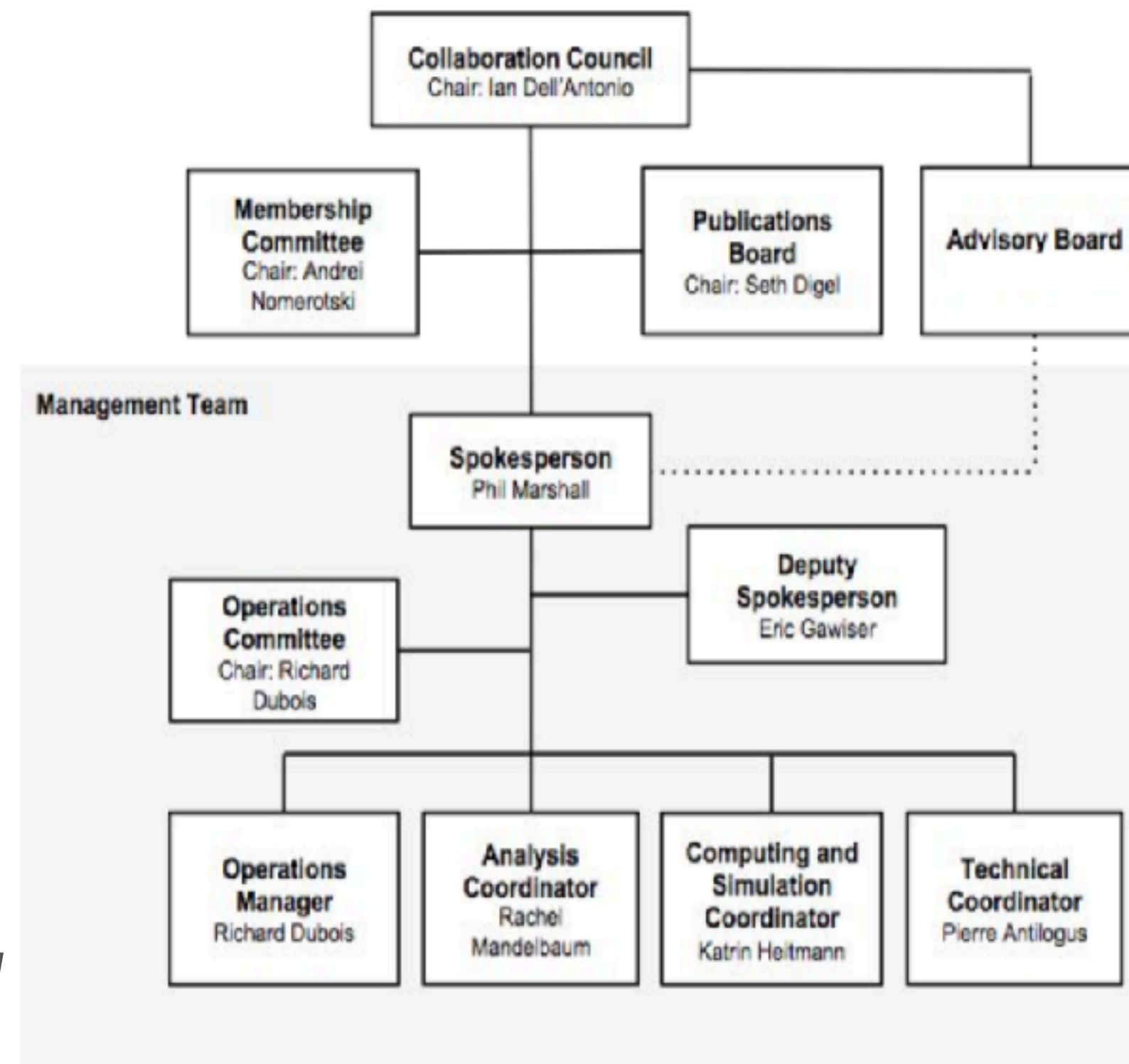
- Cosmological Simulations
- Survey Simulations
- Software and Computing Infrastructure

Analysis WG

- Weak Lensing
- Large Scale Structure
- Supernovae
- Clusters
- Strong Lensing
- Theory and Joint Probes
- Photometric Redshifts

Technical WG

- Sensor Anomalies
- Photometric Corrections



Task Forces:

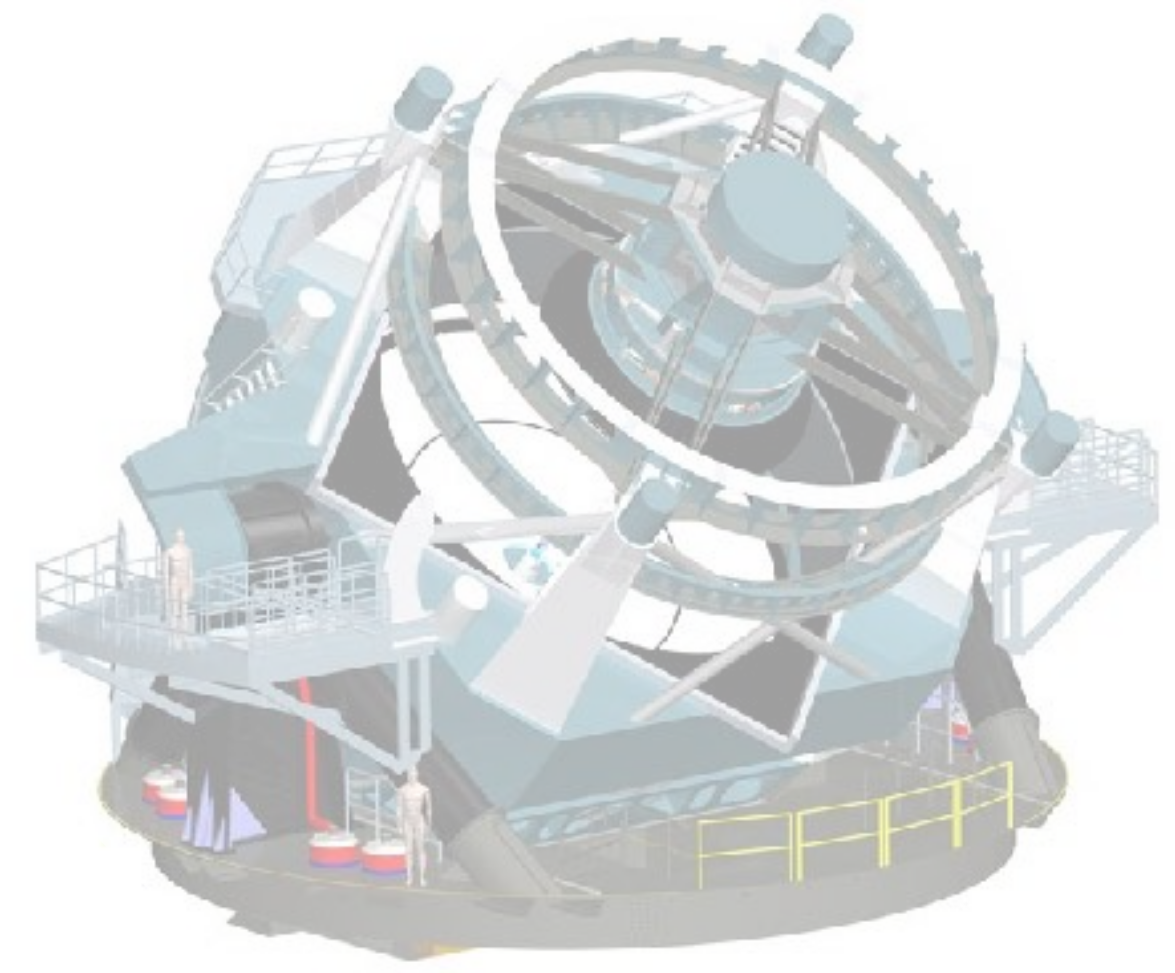
Commissioning TF

Observing Strategy TF

Blending TF

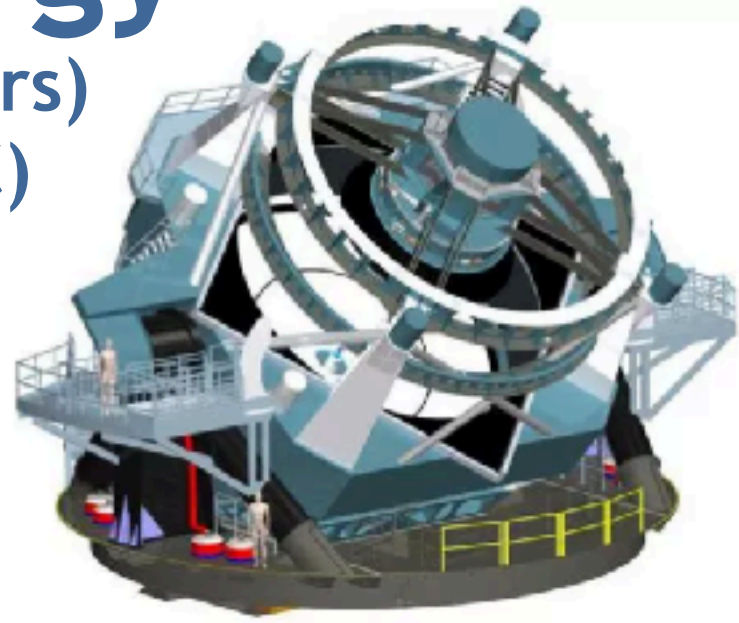
LSST SCs status : DESC

The Science Collaborations are working on Road Maps, Charters, Cadence Optimization, DDF and Minisurvey proposals



Dark Energy

Eric Gawiser (Rutgers)
Phil Marshall (KIPAC)



PHOTOMETRIC LSST ASTRONOMICAL TIME-SERIES CLASSIFICATION CHALLENGE (PLASTICC)

The Photometric LSST Astronomical Time-Series Classification Challenge (PLAsTiCC) is a community-wide challenge to spur development of algorithms to classify astronomical transients. The [Large Synoptic Survey Telescope](#) (LSST) will discover tens of thousands of transient phenomena every single night. To deal with this massive onset of data, automated algorithms to classify and sort astronomical transients are crucial.

The team creating PLAsTiCC is (as of January 2018):

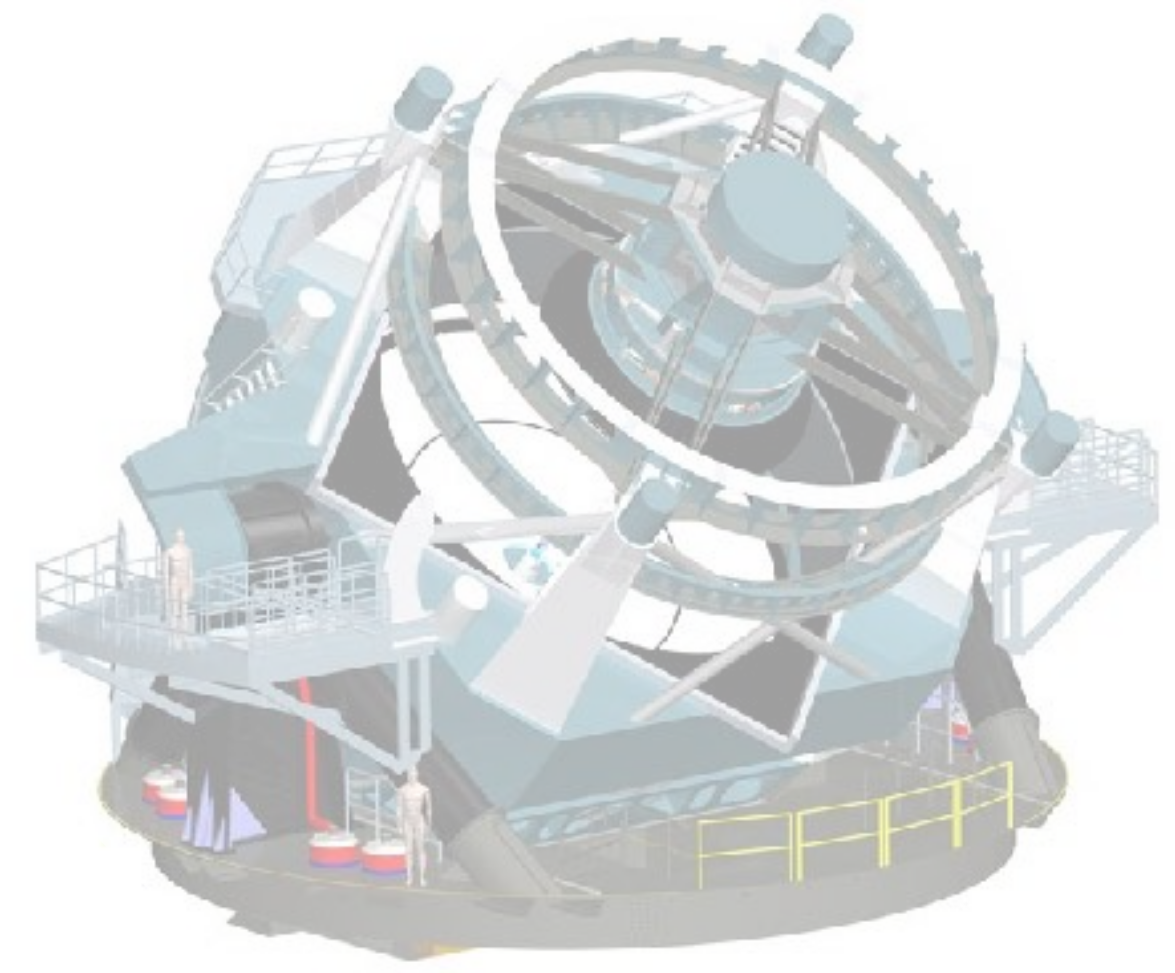
Renee Hlozek
Rick Kessler

E. Ishida
R. Biswas
G. Narayan
and others



LSST SCs status : DESC

The Science Collaborations are working on
Road Maps, Charters, Cadence Optimization, DDF and Minisurvey proposals



Dark Energy

Eric Gawiser (Rutgers)
Phil Marshall (KIPAC)

DM Stack Club *The goal is to generate significant new DM stack expertise in the LSST science collaborations*

10 weekly remote meeting sessions of SC representatives with the LSST Data Management (DM) Stack community to learn how to configure, run, and program against the DM software stack.

Will produce an extended set of high quality tutorial notebooks for others to learn from.

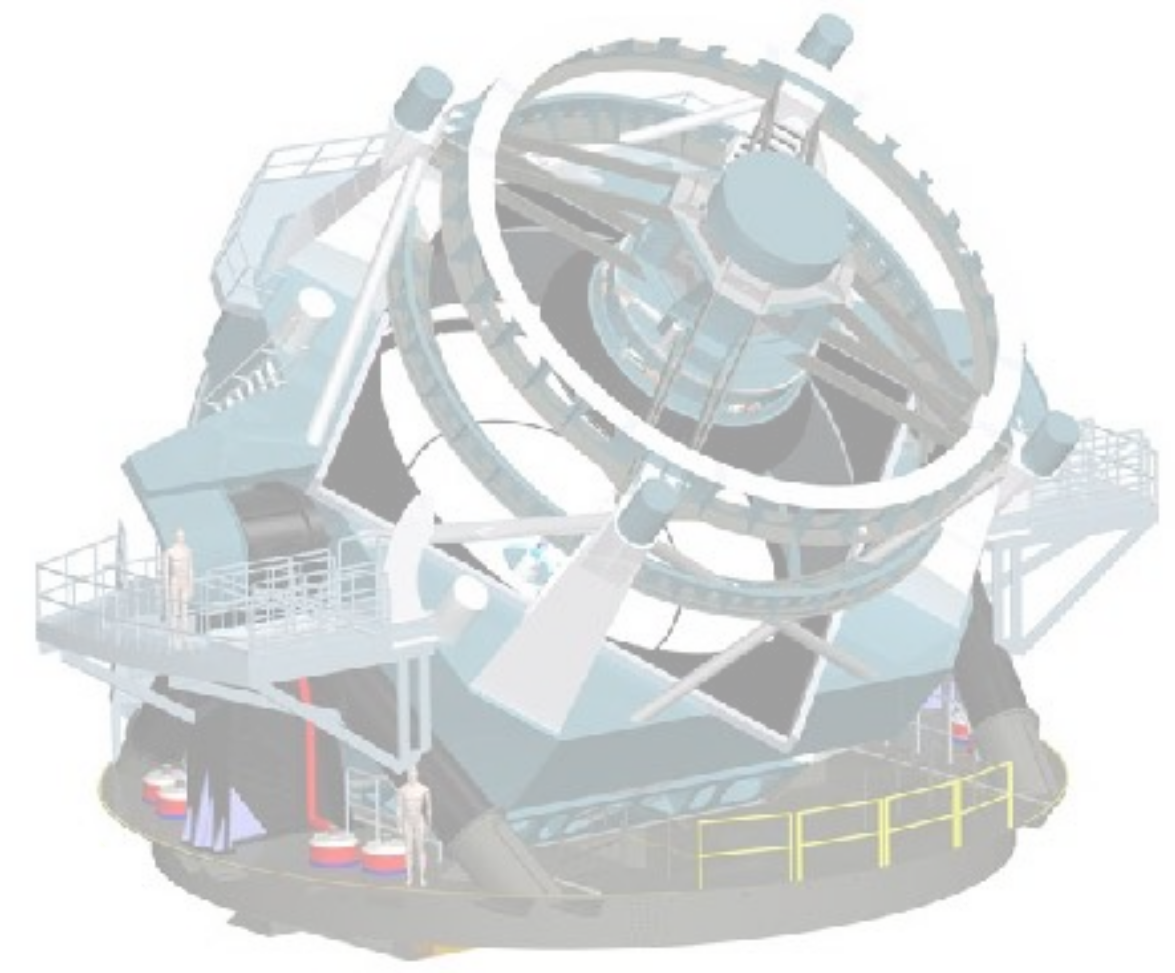
PI:¹ Phil Marshall (KIPAC, DESC), pjm@stanford.edu

Co-Investigators: Alex Drlica-Wagner (Fermilab, DESC), Greg Madejski (SLAC, AGN), Lynne Jones (UW, Solar System), Brant Robertson (UCSC, Galaxies), Aprajita Verma (Oxford, SL)

Collaborators: Jonathan Sick (LSST DM), Wil O'Mullane (LSST DM), Keith Bechtol (LSST Commissioning), Simon Krughoff (LSST SQuaRE), Dominique Boutigny (CC-IN2P3), Fabio Hernandez (CC-IN2P3)



LSST Science Collaborations' current activities



Transients and variable stars

Federica Bianco (NYU)
Rachel Street (LCO)

- Current Focus:
- *RoadMapping*
 - *Planning White Papers on Cadence including WFD,MS,DDF,ToO*
 - *Crowded field photometry*

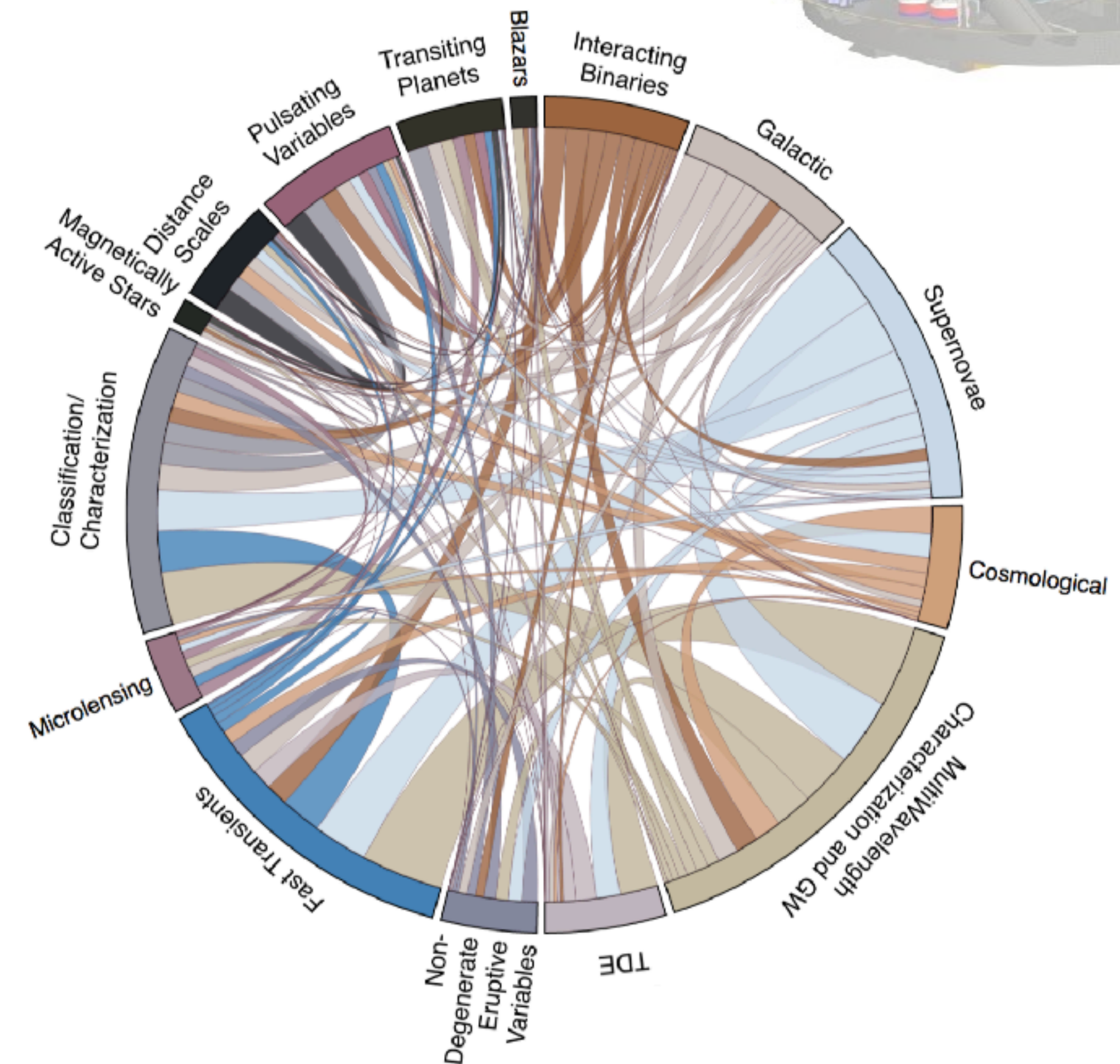
Task Forces:

DDF and Minisurvey Planning TF

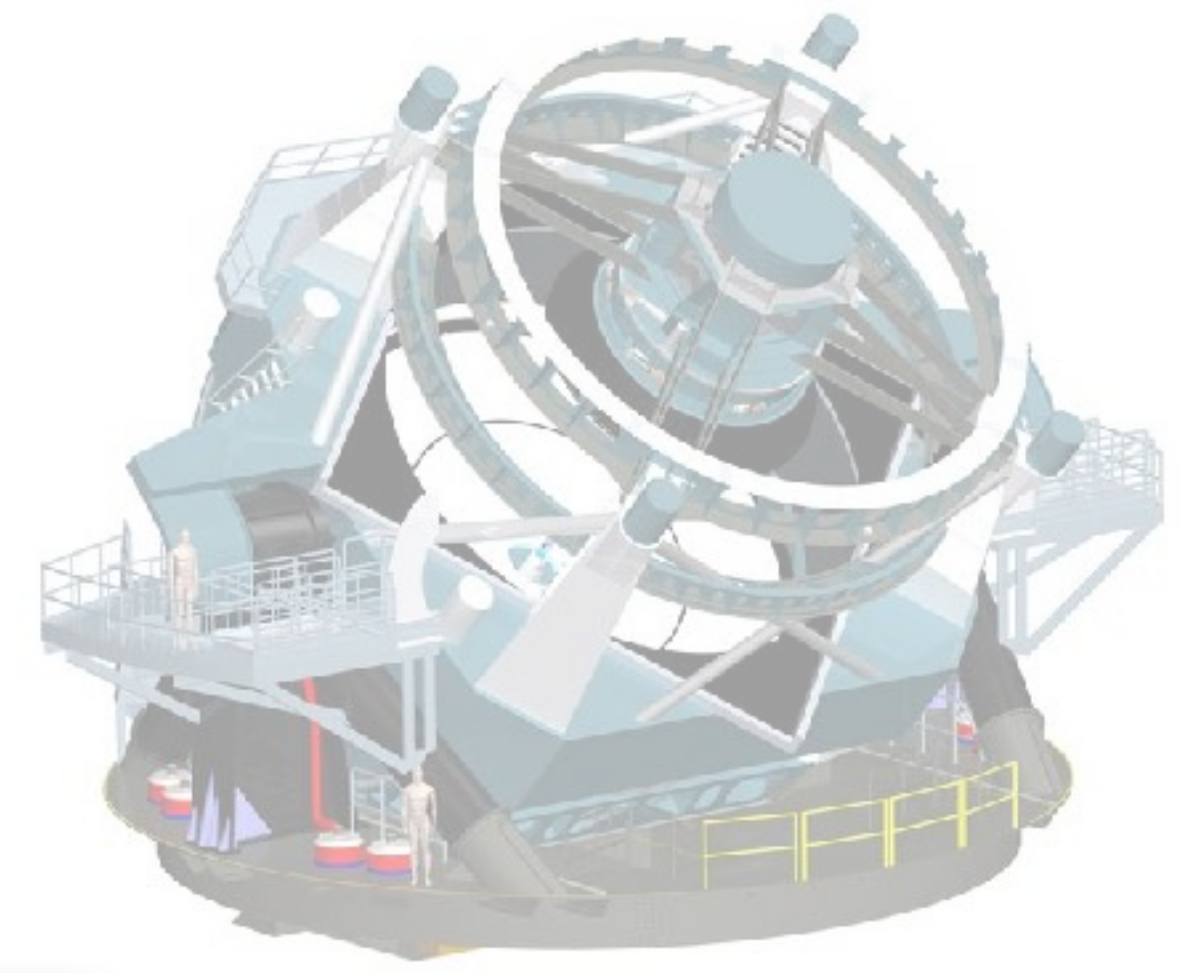
Crowded Field Photometry TF

Variability Parameters TF

Characterize a community-broker interface functionality TF



LSST Science Collaborations' current activities



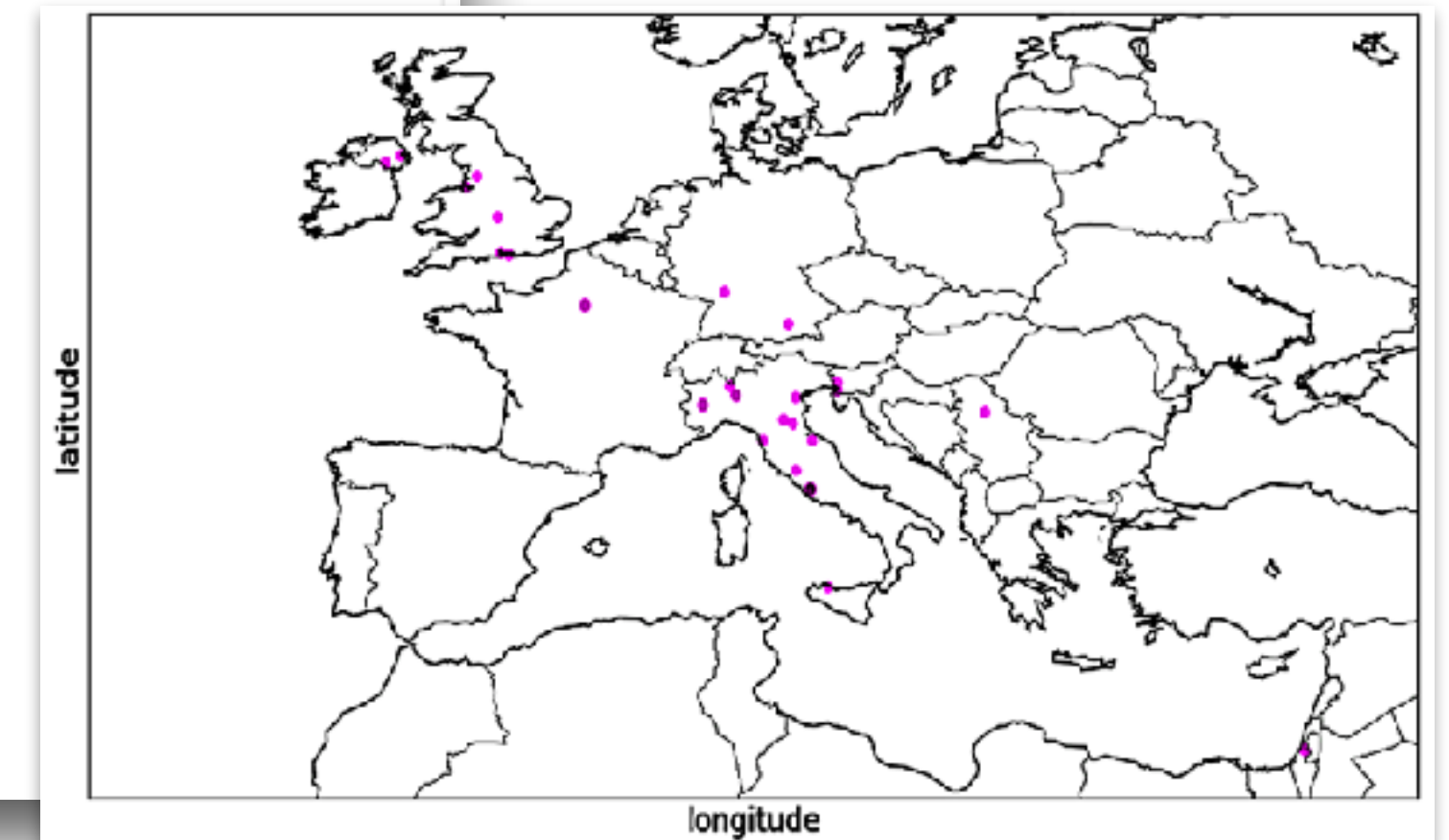
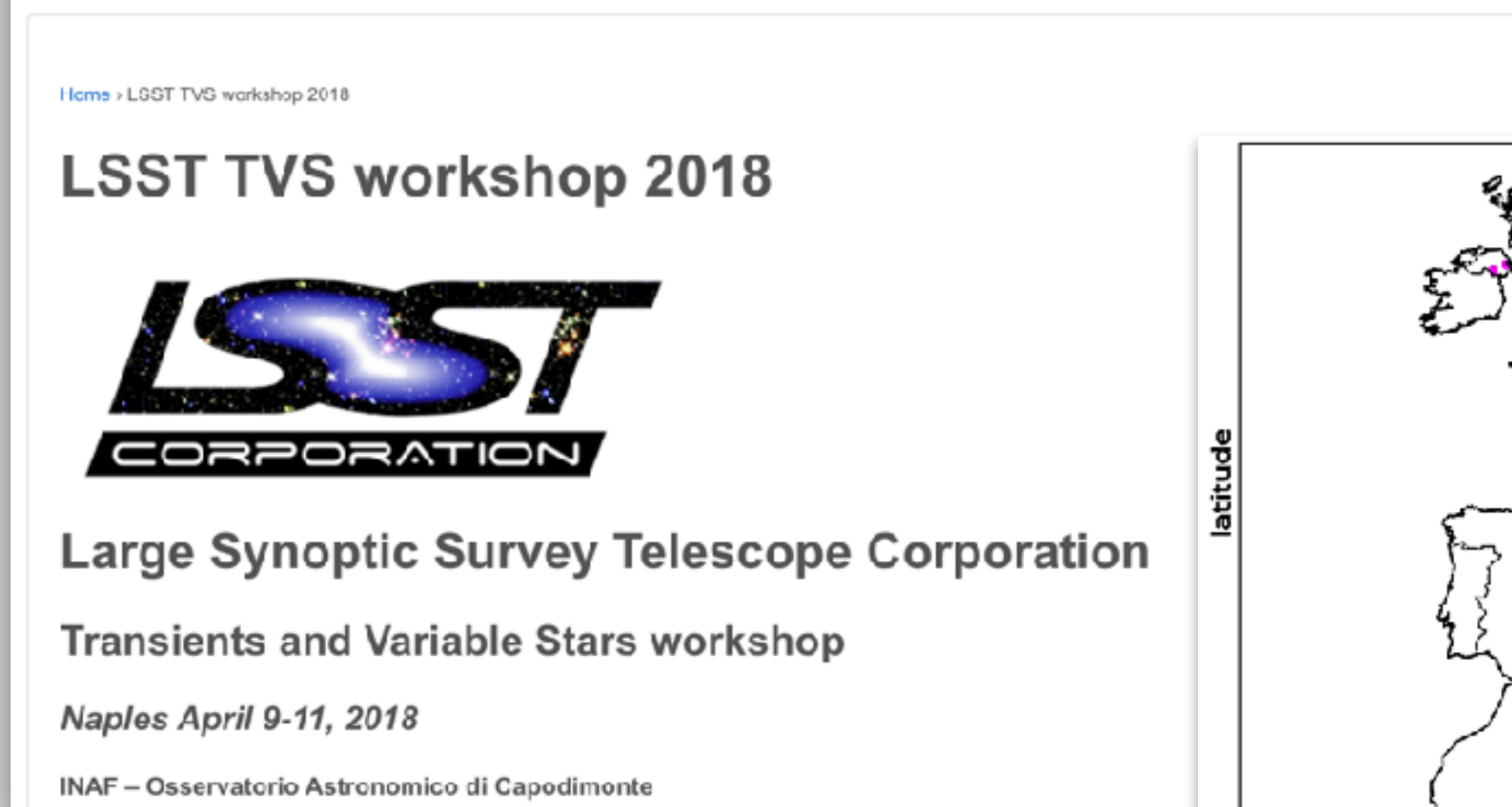
Transients and variable stars

Federica Bianco (NYU)
Rachel Street (LCO)

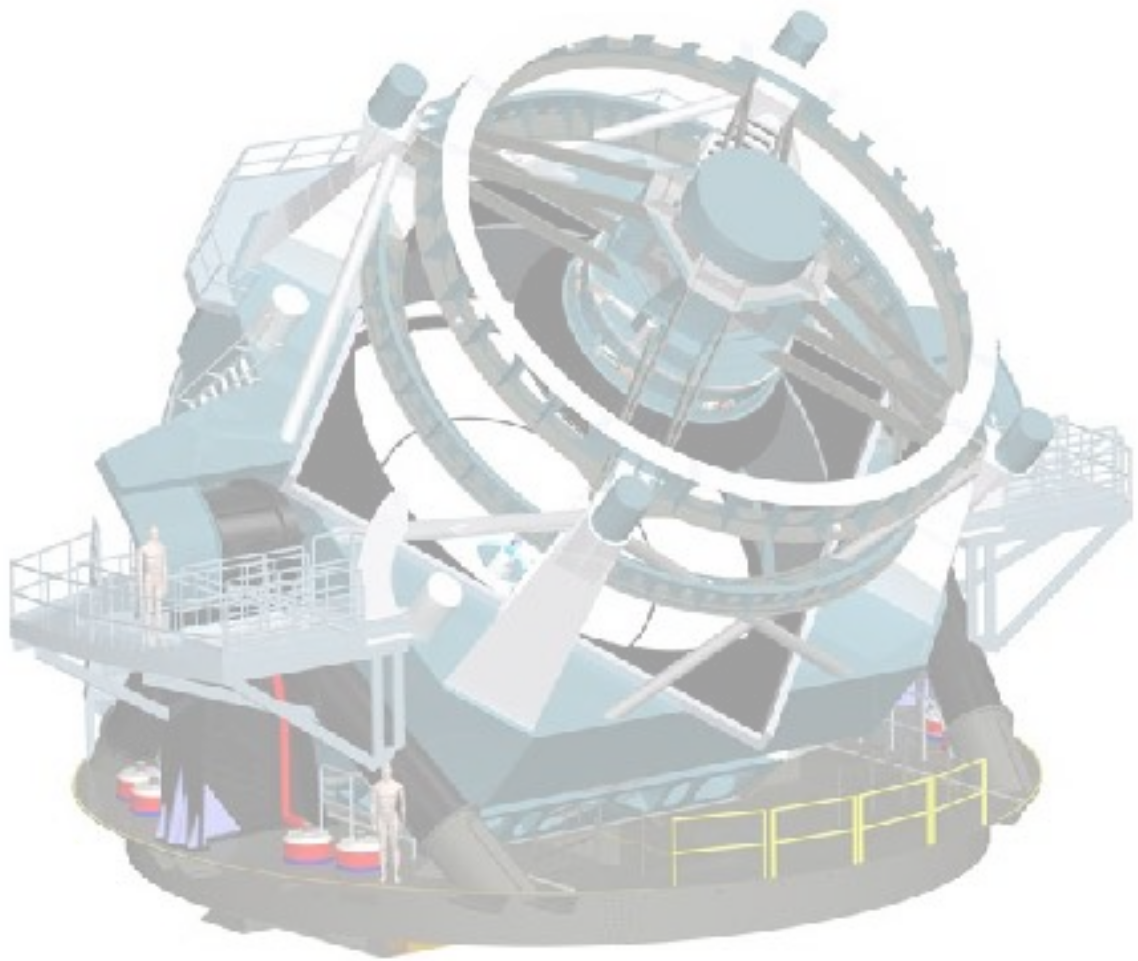
Engaging European Members

Provided a letter of support to British astronomers applying for funding for Broker via their national process

Applying for Grants to support international collaboration



LSST Science Collaborations' current activities



Transients and variable stars

Federica Bianco (NYU)
Rachel Street (LCO)

Meetings

LSST TVS Survey Strategy Proposal Preparation Workshop

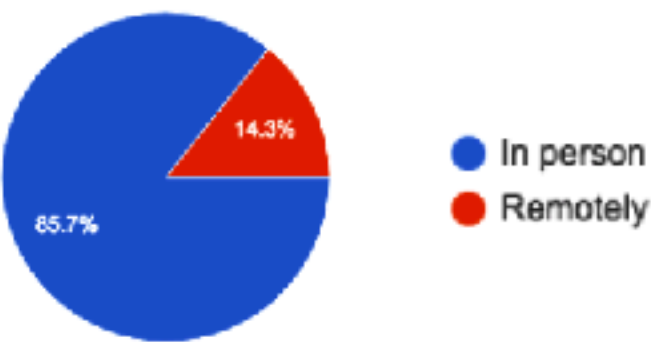
Conference: June 4-5

Unconference-Hackathon: June 6-8

Lehigh University, PA


Enabling Science

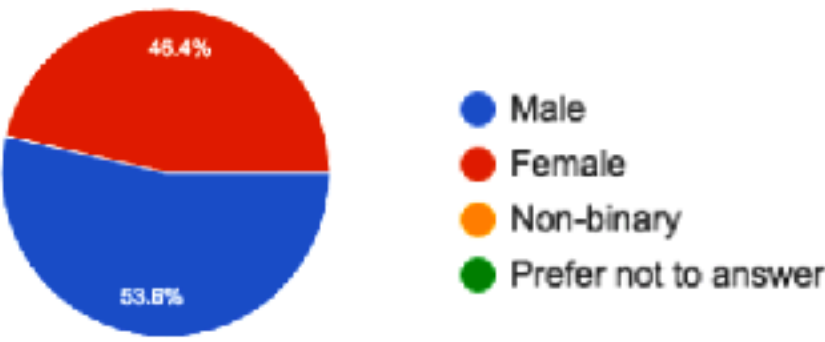
In person vs remote participation



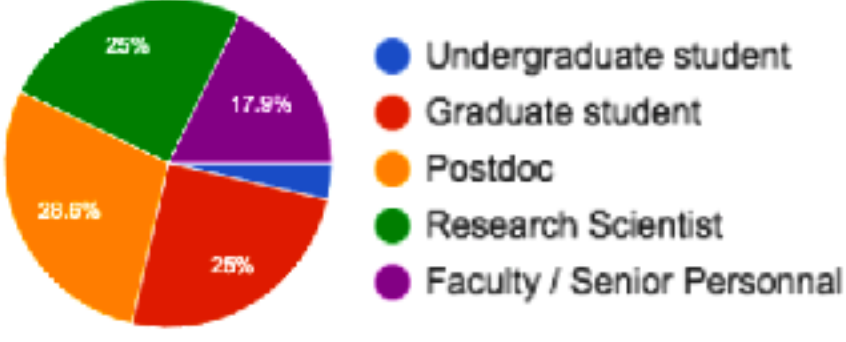
Conference or hackathon?



Gender



Academic rank



White Papers under development

- 1 *Galactic Science (WFD/MS/DDFs)*

Collecting science cases and the observing strategy constraints
- 2 *Homogeneous Cadence MS*

Conducted early on to build training datasets for ML detection and classification
- 3 *Shape+color of Transients (WFD)*

3 visits, 2 in 1 filter ~2hrs gap, and 1 in different filters within 30min
- 4 *Intermediate Mass Black Hole Science (WFD/MS)*

Detection of IMBH via microlensing in LMC+SMC
- 5 *LSST Target of Opportunity Overrides*

ToO on LSST in response to GW alerts
- 6 *Rolling Cadence AGN (WFD)*

AGN/blazar variability monitoring
- 7 *Rolling Cadence She (WFD)*

SNe rates, detection and photometric calibration
- 8 *Young Stars (WFD/minisurvey)*

T-Touri etc
- 9 *Supernovae Physics (WFD/DDF)*

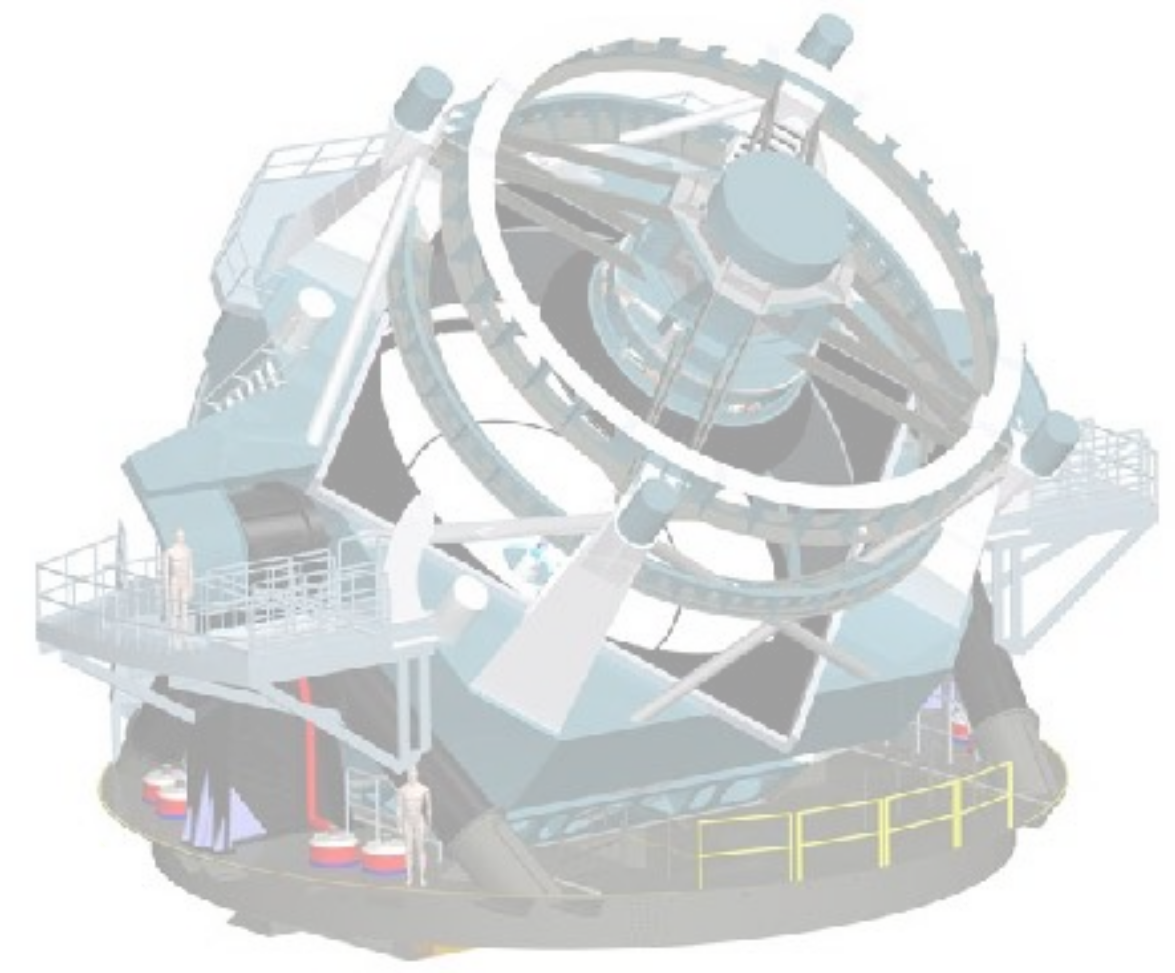
Best cadence for discriminateng models
- 11 *WFIRST Co-Observing (DDF)*

microlensing, SN...
- 12 *Expansion of North Ecliptic Spur to Triangulum (MS)*

Pixel microlensing?
Characterization of variability in distinct population
Possible overlap with Euclid?
- 13 *Random Offset in Choice of Exposure Times in Pairs*
- 14 *LMC/SMC Variables (MD)*
- 15 *LMC/SMC Deep Single Pointing (DDF)*



LSST Science Collaborations' current activities



Active Galactic Nuclei

Niel Brandt (Pennsylvania State University)

Current Focus:

- “Bootstrapping” their way along to get ready for LSST via work on, SDSS, Deep Fields, DES, ZTF, HSC SUMIRE, etc.

- Gathering critical multiwavelength data for AGN studies: X-ray and infrared data in the Deep Drilling Fields.

- *Completed the X-ray AGN survey in one of the LSST Deep-Drilling Fields, XMM-LSS. <http://personal.psu.edu/wnb3/xmmservs/xmmservs.html>*
- *Planned the X-ray observations for two more of the LSST Deep-Drilling Fields, CDF-S and ELAIS-S1.*

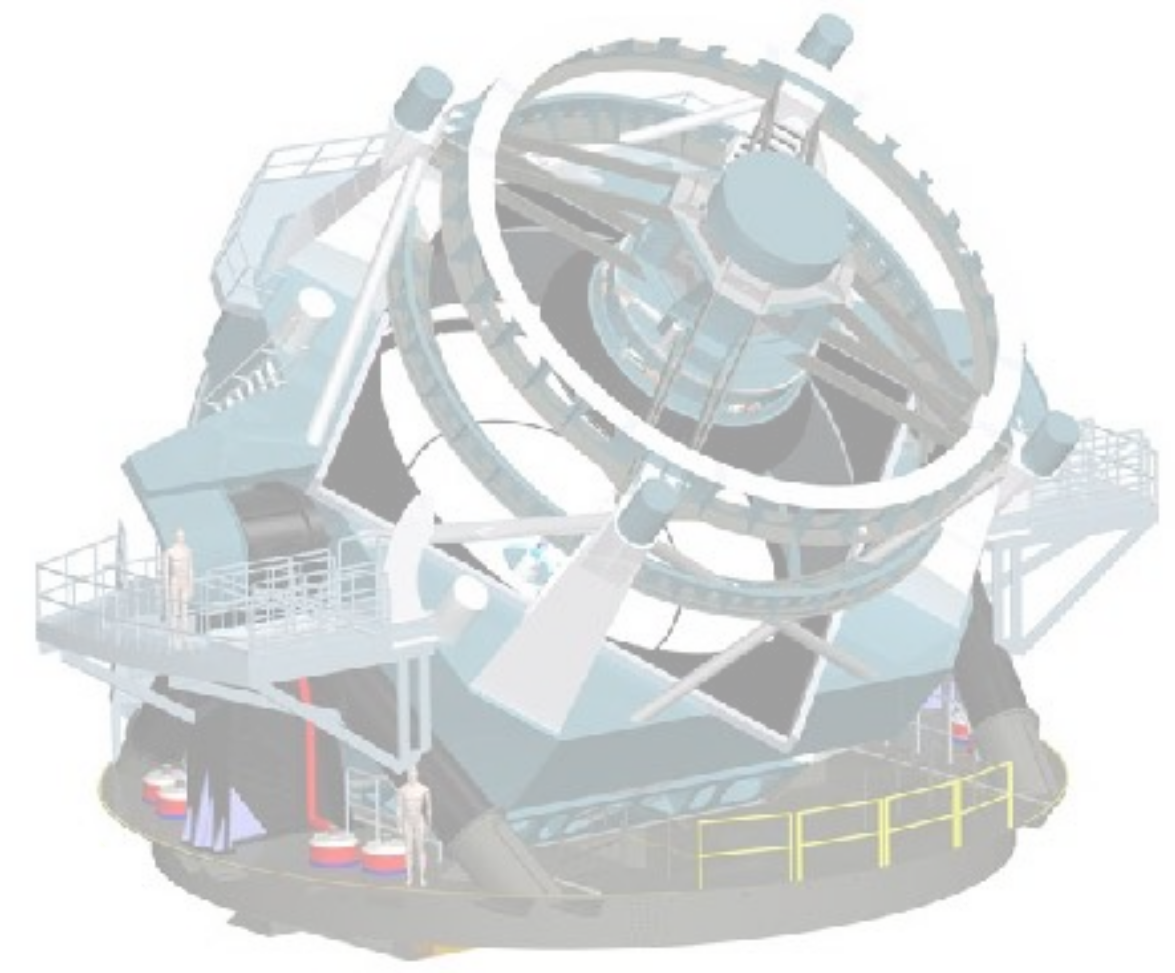
- Roadmapping to prioritize the most essential preparatory tasks.

Delivered a first solid draft of a Science Roadmap:
<https://agn.science.lsst.org/documents>

- Outreach to the broad LSST community

A letter of support to British astronomers applying for work funding via their national process. Improved the application instructions for membership in the AGN SC: <https://agn.science.lsst.org/apply>
Recent AGN SC community outreach talks in the UK, Chile, Brazil (e.g. <https://www.youtube.com/watch?v=li875H2v-8A>)

LSST Science Collaborations' current activities



<http://lsst-sssc.github.io>



Solar System

Megan Schwamb (Gemini Observatory)

David Trilling (Northern Arizona University)

Current Focus: Give input on and finalize the Solar System Database Schema with the LSST Data Management team

Working groups:

NEOs (Near Earth Objects)

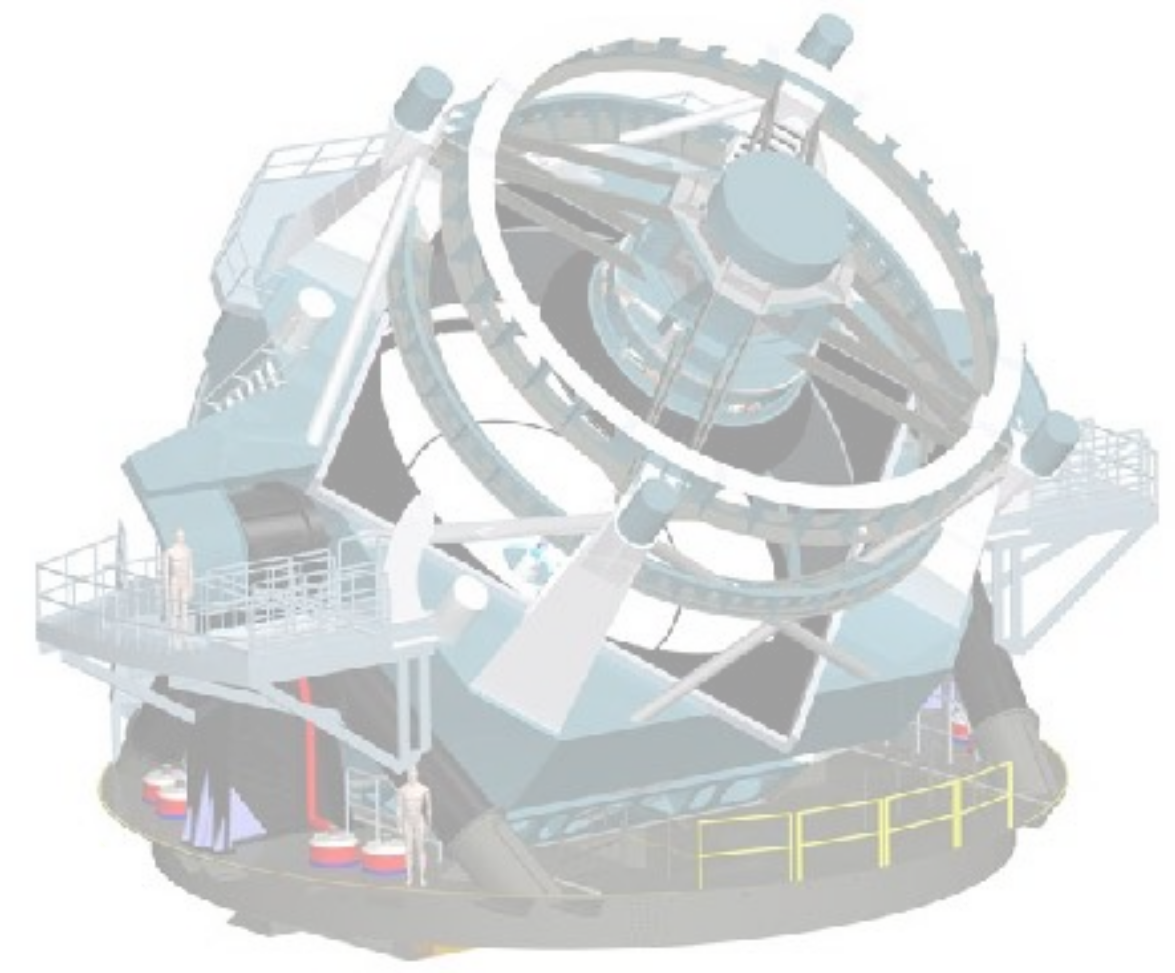
Inner Solar System

Outer Solar System

Active objects

Community software/infrastructure development

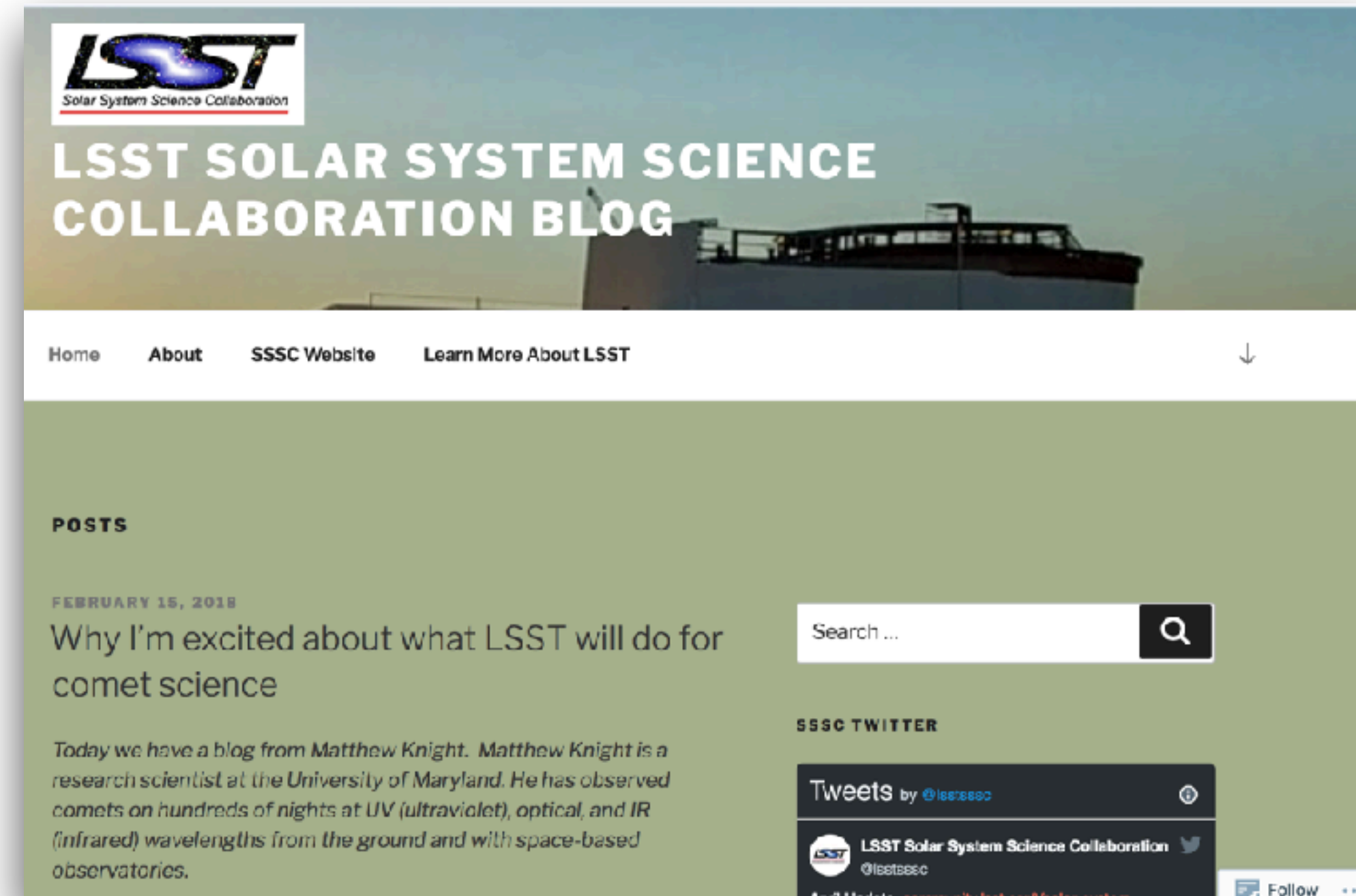
LSST Science Collaborations' current activities



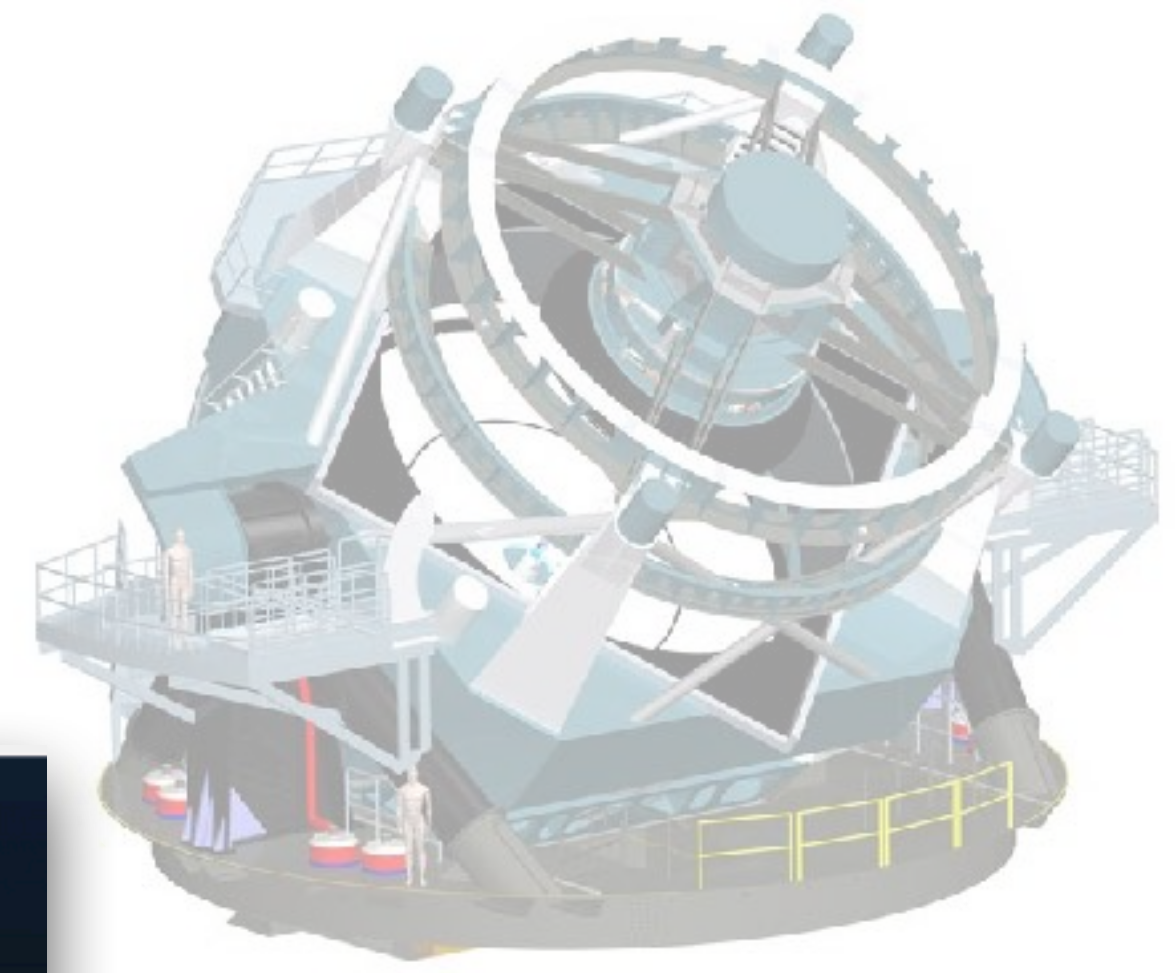
Solar System

Megan Schwamb (Gemini Observatory)

David Trilling (Northern Arizona University)



LSST Science Collaborations' current activities



Solar System

Megan Schwamb (Gemini Observatory)

David Trilling (Northern Arizona University)

LSST
Solar System Science Collaboration

LSST SOLAR SYSTEM SCIENCE COLLABORATION

Home About SSSC Website Learn More

POSTS

FEBRUARY 15, 2018

Why I'm excited about what comet science

Today we have a blog from Matthew Knight. A research scientist at the University of Maryland, he has observed comets on hundreds of nights at UV (ultraviolet) and IR (infrared) wavelengths from the ground and with space observatories.

SSSC Readiness Sprint Registration Form July 10-12

The Sprint will be July 10-12, 2018 at the University of Washington in Seattle.

The goal is to jump start the work the SSSC needs to provide input into cadence decisions and get us ready for the initial LSST science in general. This includes laying the infrastructure groundwork for joint computational tools (github repositories, common computing infrastructure, initial code, etc.), drafting user-contributed data products, critical MAF (Metrics Analysis Framework) metrics, and others issues to be identified by July.

Due to its interactive nature, we are limiting the sprint to approximately 20 attendees. Please fill out the form to register in order to be considered to attend the SSSC Readiness Sprint by 9 pm PDT on April 23, 2018.

We have funding to provide partial and full travel/lodging support for a number of attendees. With this form you can also express interest to be considered for financial support to attend the sprint.

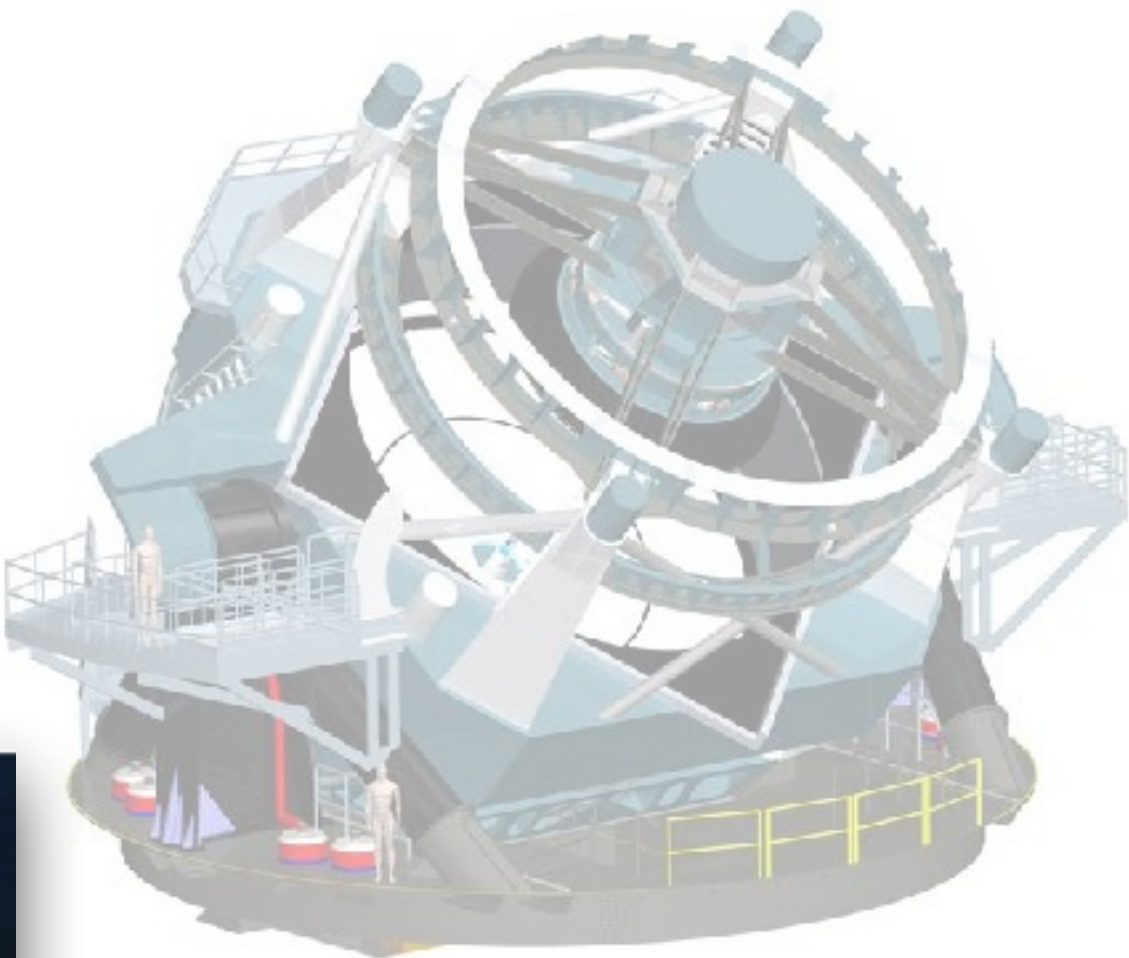
Selection of attendees will be focused on ensuring a wide variety of career stages, skill sets, perspectives, research expertise, backgrounds, and experiences are represented at the sprint. You will hear back from the organizers by May 10, 2018.

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LSST Science Collaborations' current activities

Solar System

Megan Schwamb (Gemini Observatory)
David Trilling (Northern Arizona University)





LSST SOLAR SYSTEM SCIENCE COLLABORATION

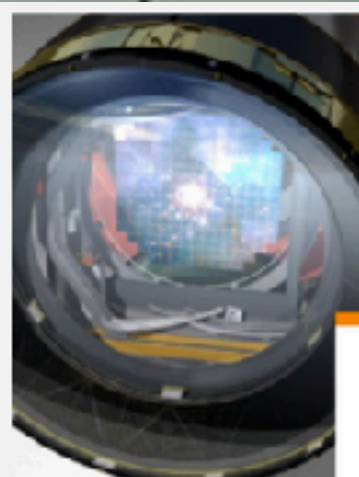
Home About SSSC Website Learn More

POSTS

FEBRUARY 15, 2018

Why I'm excited about what LSST can do for comet science

Today we have a blog from Matthew Knight. A research scientist at the University of Maryland, he has observed comets on hundreds of nights at UV (ultraviolet) and IR (infrared) wavelengths from the ground and with space observatories.



SSSC Readiness Sprint Registration Form July 10-12

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Due to its interactive nature, we are limiting the number of attendees to 100. To register, please fill out the form to register in order to be considered for the sprint on April 23, 2018.

We have funding to provide partial and full travel for attendees. If you are interested in attending, please fill out this form you can also express interest to be considered for funding.

Selection of attendees will be focused on ensuring a mix of perspectives, research expertise, backgrounds, and geographic locations. We will hear back from the organizers by May 10, 2018.

This content is neither created nor endorsed by LSST Corporation.

Large Synoptic Survey Telescope Solar System Science Roadmap

MEGAN E. SCHWAMB,¹ R. LYNNE JONES,² STEVEN R. CHESLEY,³ ALAN FITZSIMMONS,⁴ WESLEY C. FRASER,⁴ MATTHEW J. HOLMAN,⁵ HENRY HSIEH,⁶ DARIN RAGOZZINE,⁷ CRISTINA A. THOMAS,^{6,8} DAVID E. TRILLING,⁸ MICHAEL E. BROWN,⁹ MICHELE T. BANNISTER,⁴ DENNIS BODEWITS,¹⁰ MIGUEL DE VAL-BORRO,^{11,12} DAVID GERDES,¹³ MIKAEL GRANVIK,¹⁴ MICHAEL S. P. KELLEY,¹⁰ MATTHEW M. KNIGHT,¹⁰ ROBERT L. SEAMAN,¹⁶ QUAN-ZHI YE,^{16,17} AND LESLIE A. YOUNG¹⁸

ON BEHALF OF THE LSST SOLAR SYSTEM SCIENCE COLLABORATION

(Published February 7, 2018 - Version 1.0)

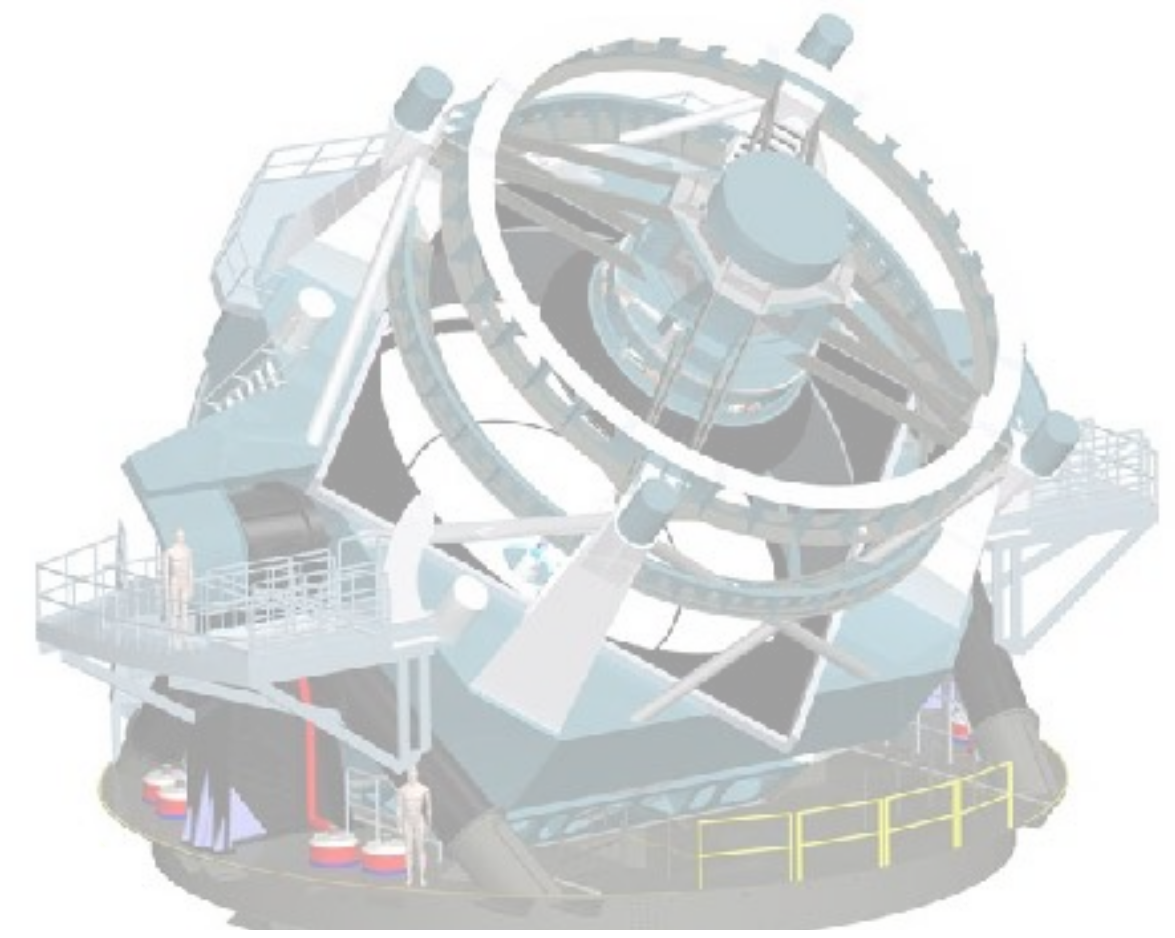
ABSTRACT

The Large Synoptic Survey Telescope (LSST) is uniquely equipped to search for Solar System bodies due to its unprecedented combination of depth and wide field coverage. Over a ten-year period starting in 2022, LSST will generate the largest catalog of Solar System objects to date. The main goal of the LSST Solar System Science Collaboration (SSSC) is to facilitate the efforts of the planetary community to study the planets and small body populations residing within our Solar System using LSST data. To prepare for future survey cadence decisions and ensure that interesting and novel Solar System science is achievable with LSST, the SSSC has identified and prioritized key Solar System research areas for investigation with LSST in this roadmap. The ranked science priorities highlighted in this living document will inform LSST survey cadence decisions and aid in identifying software tools and pipelines needed to be developed by the planetary community as added value products and resources before the planned start of LSST science operations.

Keywords: editorials, notices — miscellaneous — catalogs — surveys



LSST Science Collaborations' current activities



Galaxies

Michael Cooper (UC Irvine)

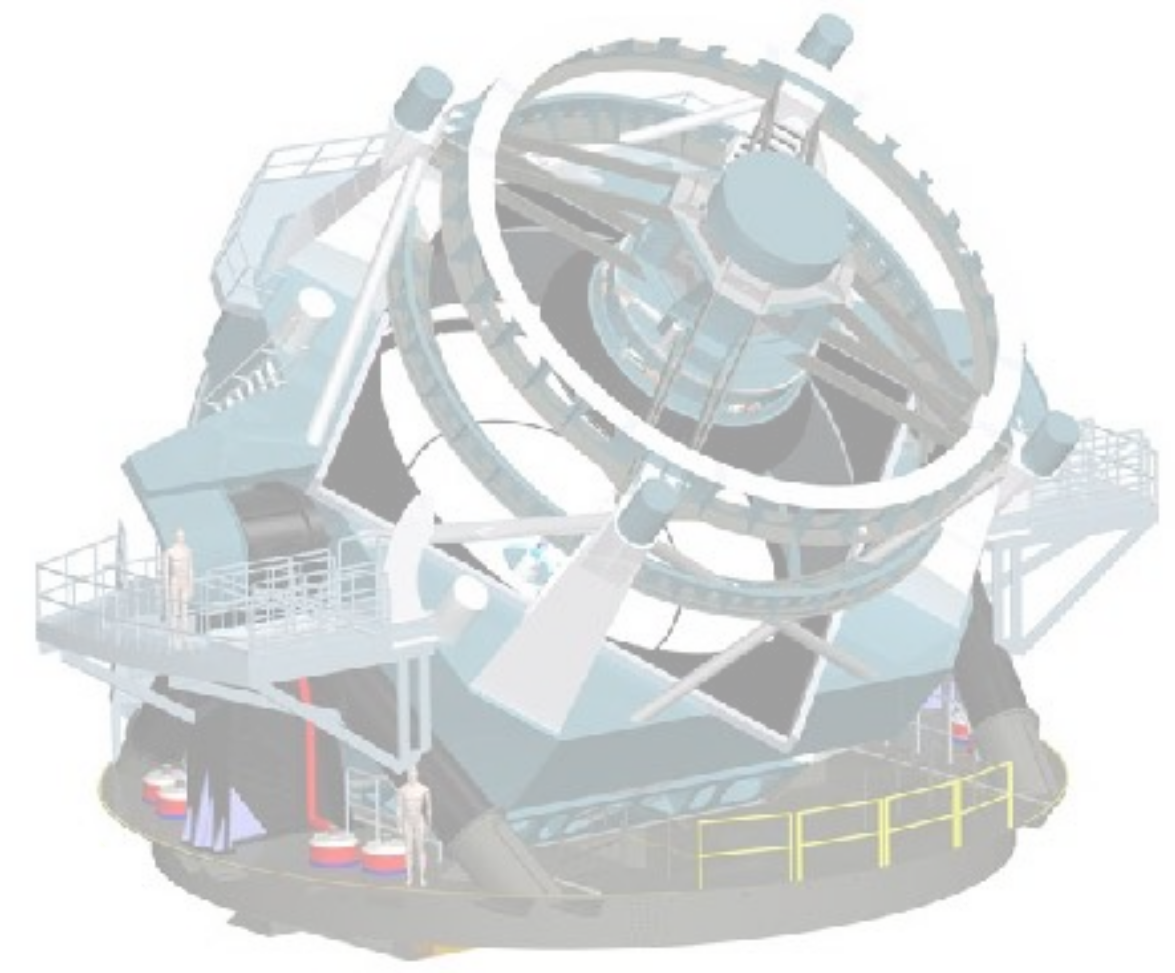
Brant Robertson (University of California, Santa Cruz)

Current Focus:

- Dwarf Galaxies
- Tidal Tails and Streams
- Galaxy Mergers and Merger Rates
- Demographics of Galaxy Population
- Galaxy Morphology
- Wide-Area, Multi-band Searches for High-Redshift Galaxies

- **Revise the LSST Galaxies Science Collaboration Charter** (<https://galaxies.science.lsst.org/documents/charter>). *This document predates when LSST:UK and other international collaborators joined*, and we would like to modernize and implement several of the collaboration structures described in the document. Executive and publication committees and election of new co-Chairs.
- **Organizing in Working Groups**
- **Members are *leading LSST:UK Phase B science proposals* to conduct work outlined in the Roadmap.**
- **Participating in the Blending Workshop at the PCW.**
- **Prepare Minisurvey / Deep Drilling Field proposals.**

LSST Science Collaborations' current activities



Stars, Milky Way, and Local Volume

John Bochanski (Rider University)

John Gizis (University of Delaware)

Nitya Jacob Kallivayalil (University of Virginia)

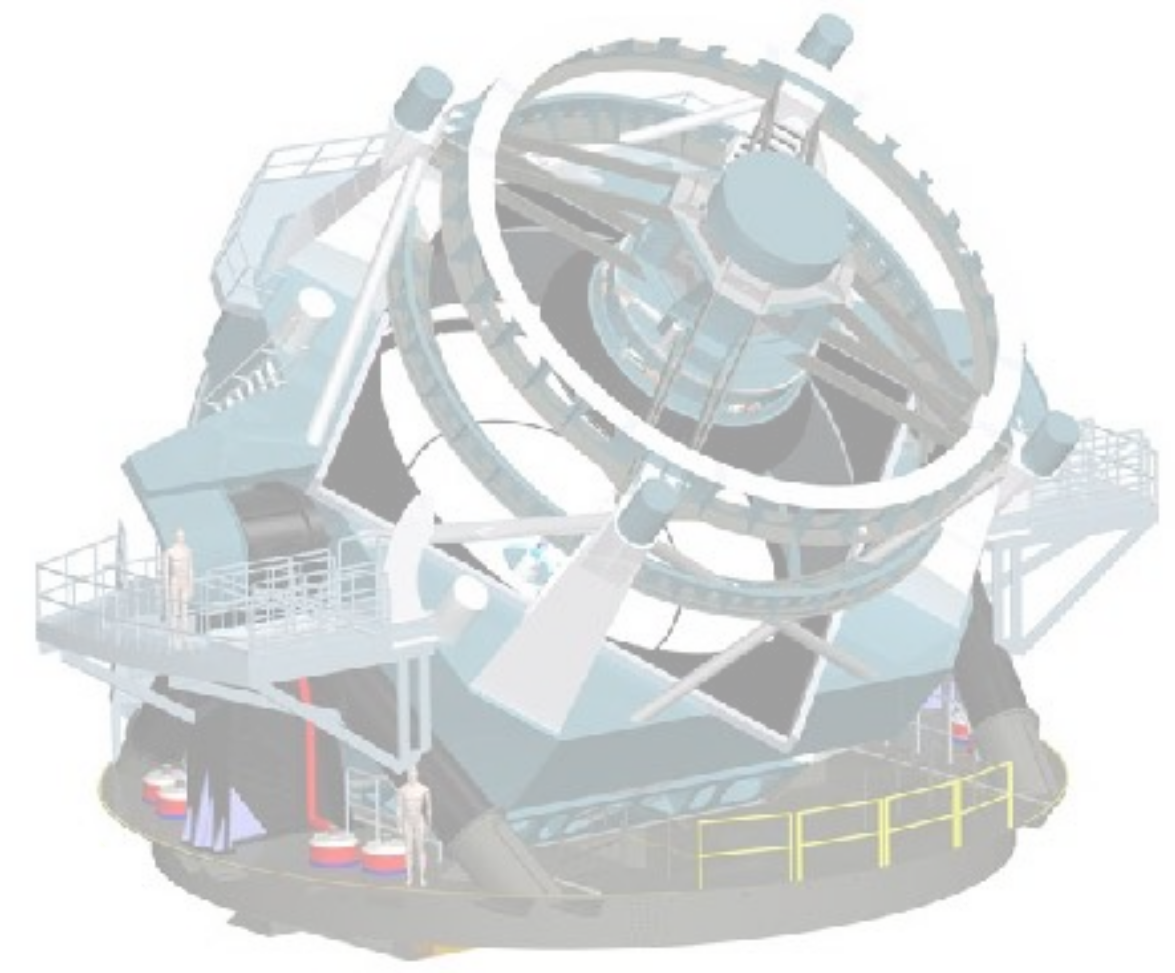
Current Focus:

Working groups:

Variable Stars
Star Clusters
Magellanic Clouds
Near Field Cosmology
The Galactic Bulge
The Solar Neighborhood
Galactic Structure and ISM

- **Applications for fundings to LSST:UK for analysis tools.**
- **Crowded field photometry** : *investigate LSST crowded field photometry; a report is anticipated by June*
- **Cadence Planning** : *begin planning mini-survey and DDF proposals.*
- **Astrometric calibration in post-Gaia era** : *discussing how to test the astrometry pipeline.*
- **Development of algorithms to select stellar tracers**

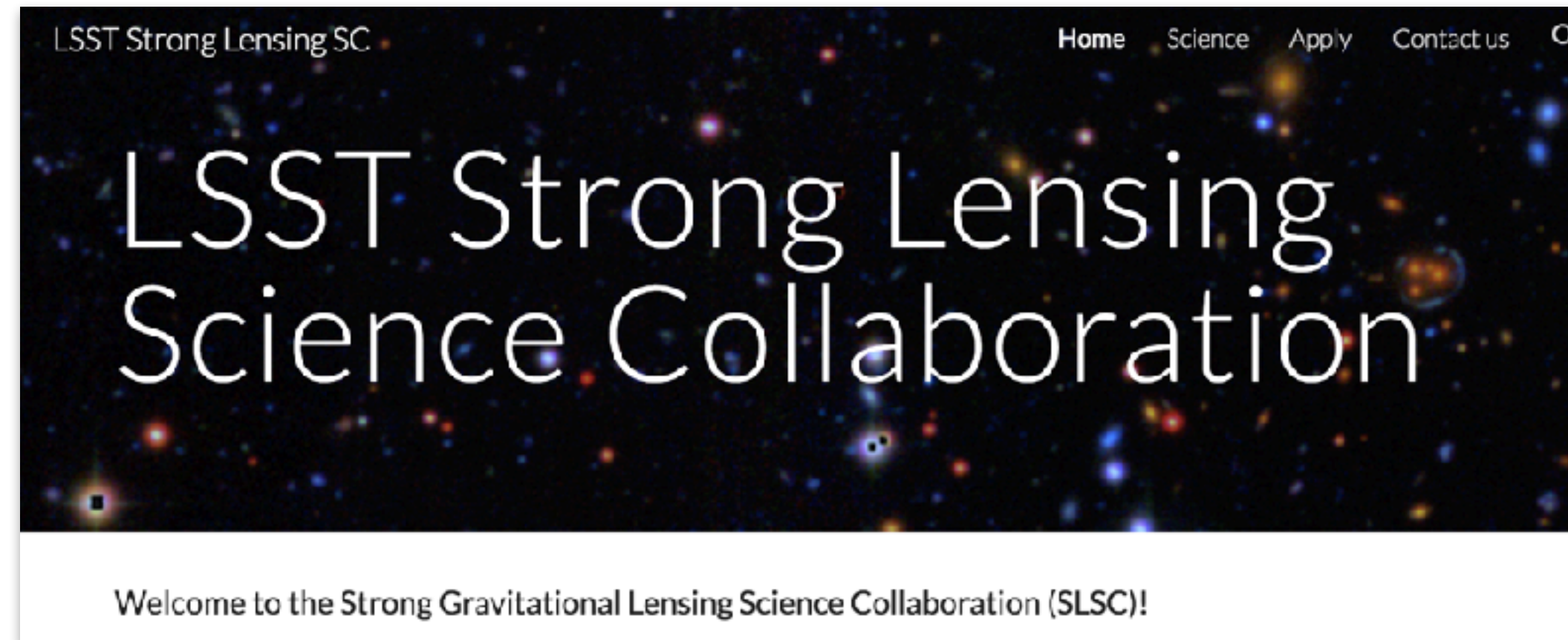
LSST Science Collaborations' current activities



Strong Lensing

Charles Keeton (Rutgers)

Aprajita Verma (Oxford University)



new website

<https://sites.google.com/view/lsst-stronglensing>

Closely working with the Dark Energy Science Collaboration Strong Lensing

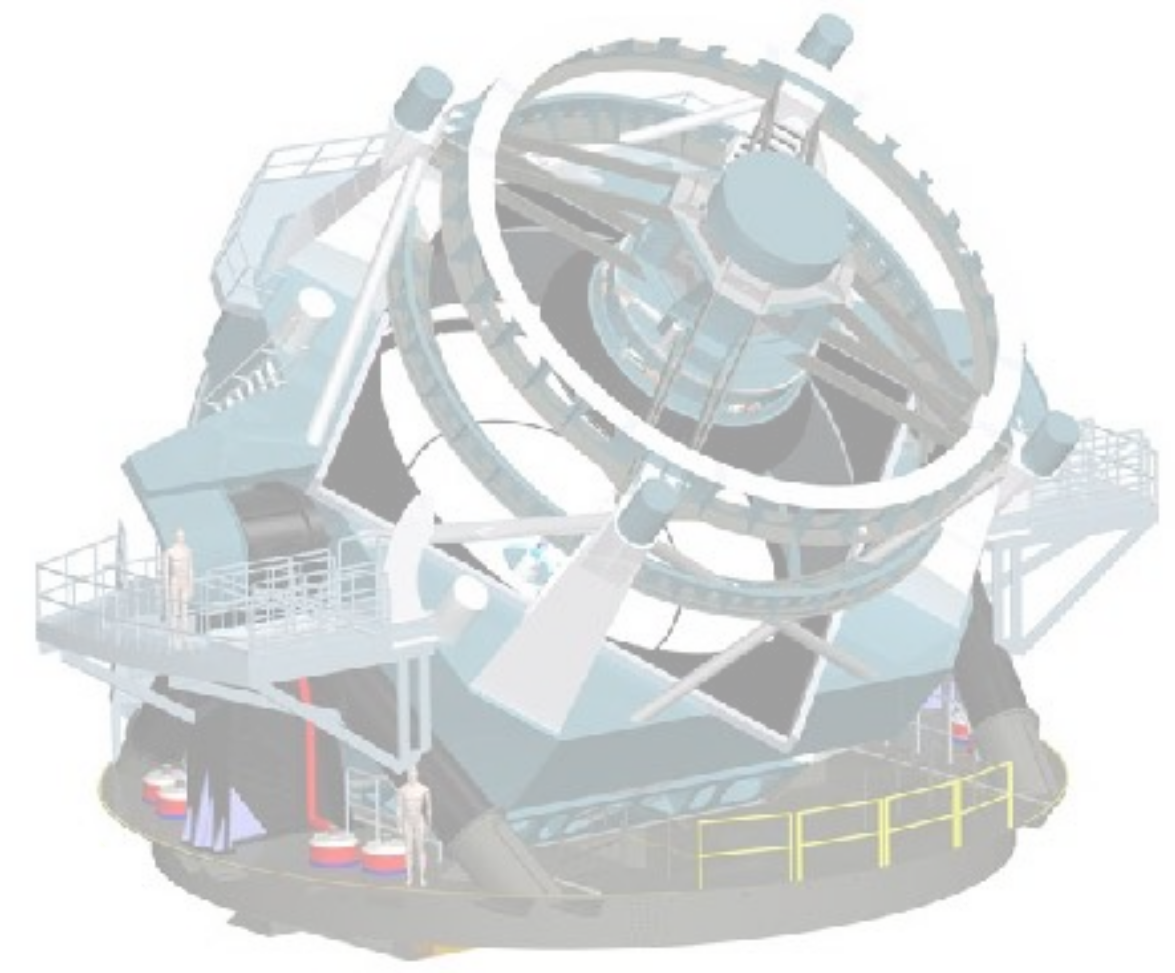
Working Group: Co-Convenors Tom Collett & Danny Goldstein

Current Focus:

Main activities involve preparing for the phase change from detailed studies of individual systems to statistically large samples

- Submitting funding proposals to LSST:UK
- Inclusion of strongly lensed variable sources into the DESC DC2.
- SLSC members participated in the recent PittPACC workshop of Dark Matter Science with LSST. The ongoing plan to write a roadmap for SL science would connect well with that goal.

LSST Science Collaborations' current activities



Informatics and Statistics

Tom Loredo (Cornell University)

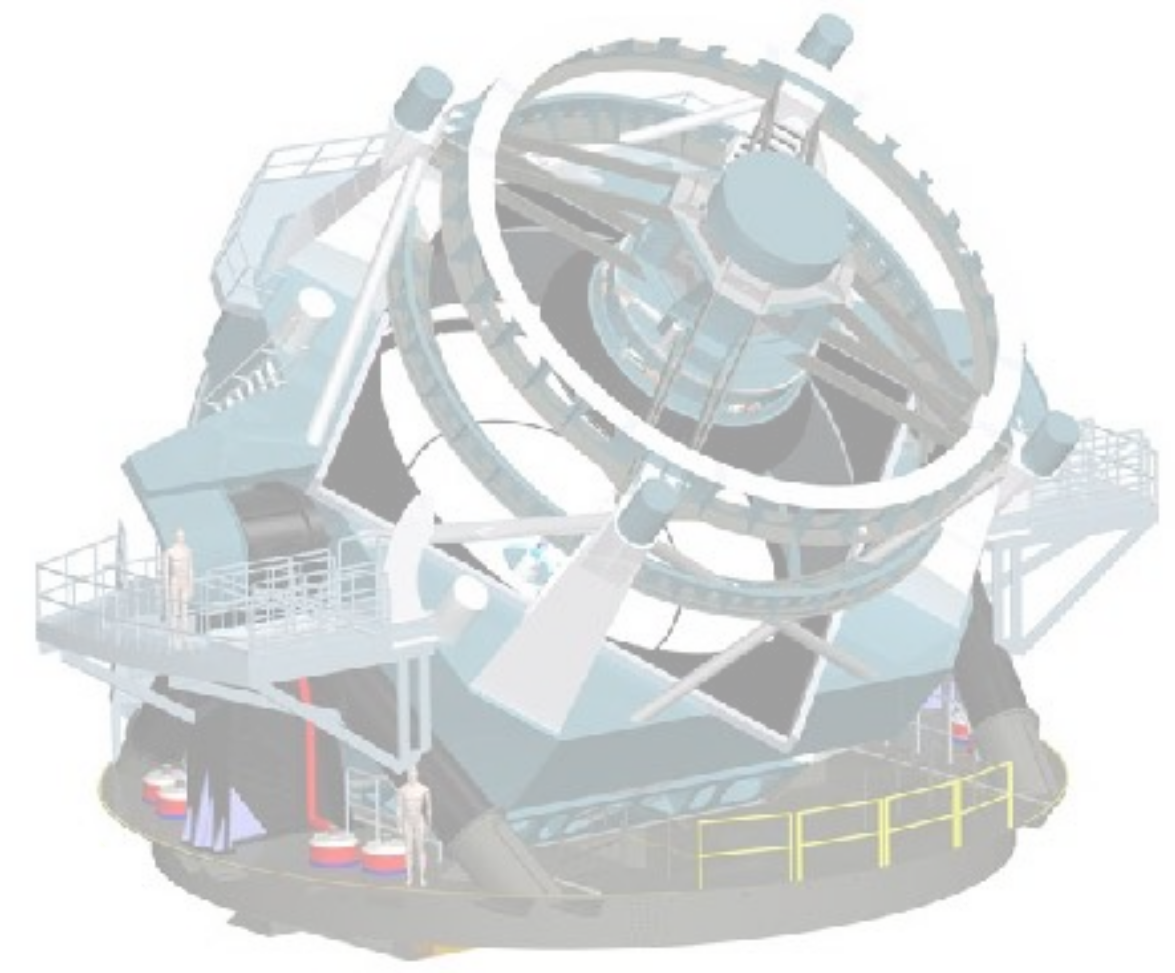
Chad Schafer (Carnegie Mellon University)

Current Focus

Individual/Small Group Research

- Photometric Redshift Estimation
- Classification: SNe, Transients/Variables
- Cosmological Parameter Estimation
- Functional data analysis for modeling populations of light curves

LSST Science Collaborations' current activities



Informatics and Statistics

Tom Loredo (Cornell University)

Chad Schafer (Carnegie Mellon University)

Current Focus

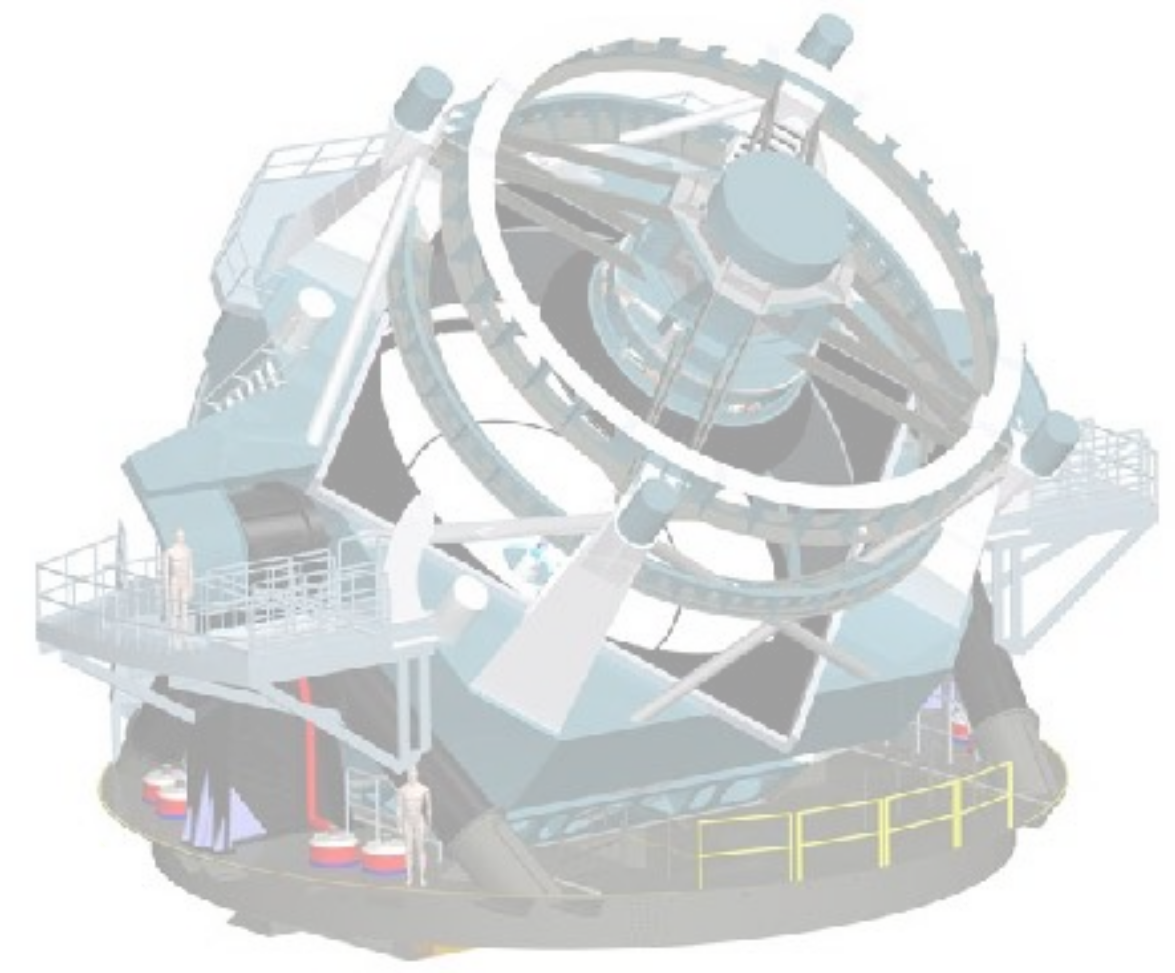
Individual/Small Group Research

- Photometric Redshift Estimation
- Classification: SNe, Transients/Variables
- Cosmological Parameter Estimation
- Functional data analysis for modeling populations of light curves

Cross-Collaboration Participation

- ISSC membership includes many key members of other science collaborations, fostering cross-discipline collaboration.
- Active participation in varied working groups, particularly DESC and TVS

LSST Science Collaborations' current activities



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Tom Loredo (Cornell University)

Chad Schafer (Carnegie Mellon University)

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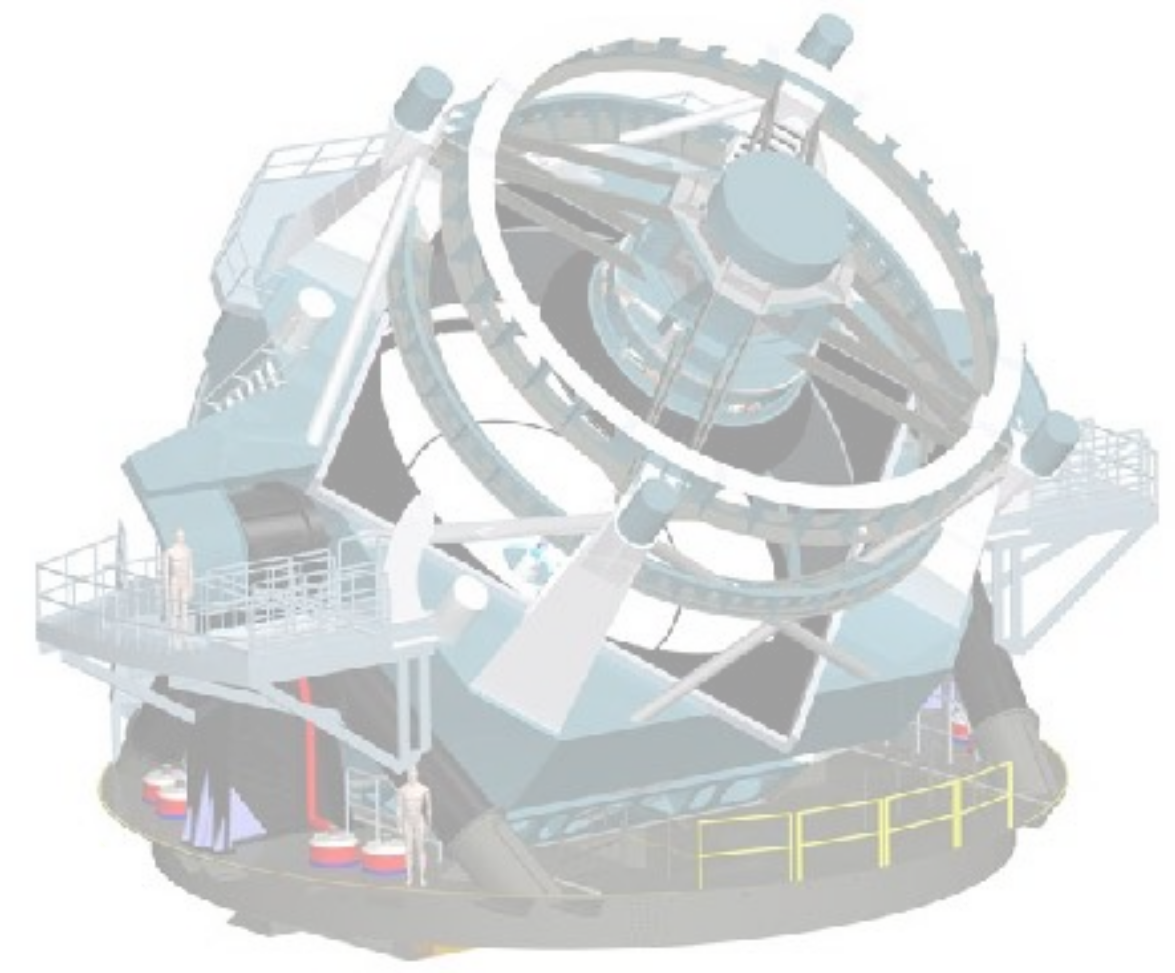
Cross-Collaboration Participation

- ISSC membership includes many key members of other science collaborations, fostering cross-discipline collaboration.
- Active participation in varied working groups, particularly DESC and TVS

Planned LSST-wide Consulting

- Open “StatML Q&A” on LSST *Community* and *Slack*
- Provide article/proposal reviews
- Jupyter notebook tutorials

LSST Science Collaborations' current activities



Informatics and Statistics

Tom Loredo (Cornell University)

Chad Schafer (Carnegie Mellon University)

A banner for the PennState Center for Astrostatistics. The top part is dark blue with the PennState logo and the text "PennState Center for Astrostatistics". To the right is a graphic of a galaxy with a yellow curve overlaid. Below this is a yellow bar with the text "2018 Summer School | [Travel & Visa](#) | [Lodging](#) | [Registration](#) | [Program](#)". Below that is a white bar with the text "Summer School in Statistics for Astronomers XIV (May 29 - June 2, 2018)" and "Summer School in Astroinformatics (June 4 - 8, 2018)". At the bottom left, the text "Registration" is partially visible.

PennState Center for Astrostatistics

2018 Summer School | [Travel & Visa](#) | [Lodging](#) | [Registration](#) | [Program](#)

Summer School in Statistics for Astronomers XIV (May 29 - June 2, 2018)

Summer School in Astroinformatics (June 4 - 8, 2018)

Registration

LSST TVS Survey Strategy Proposal Preparation Workshop

Conference: June 4-5

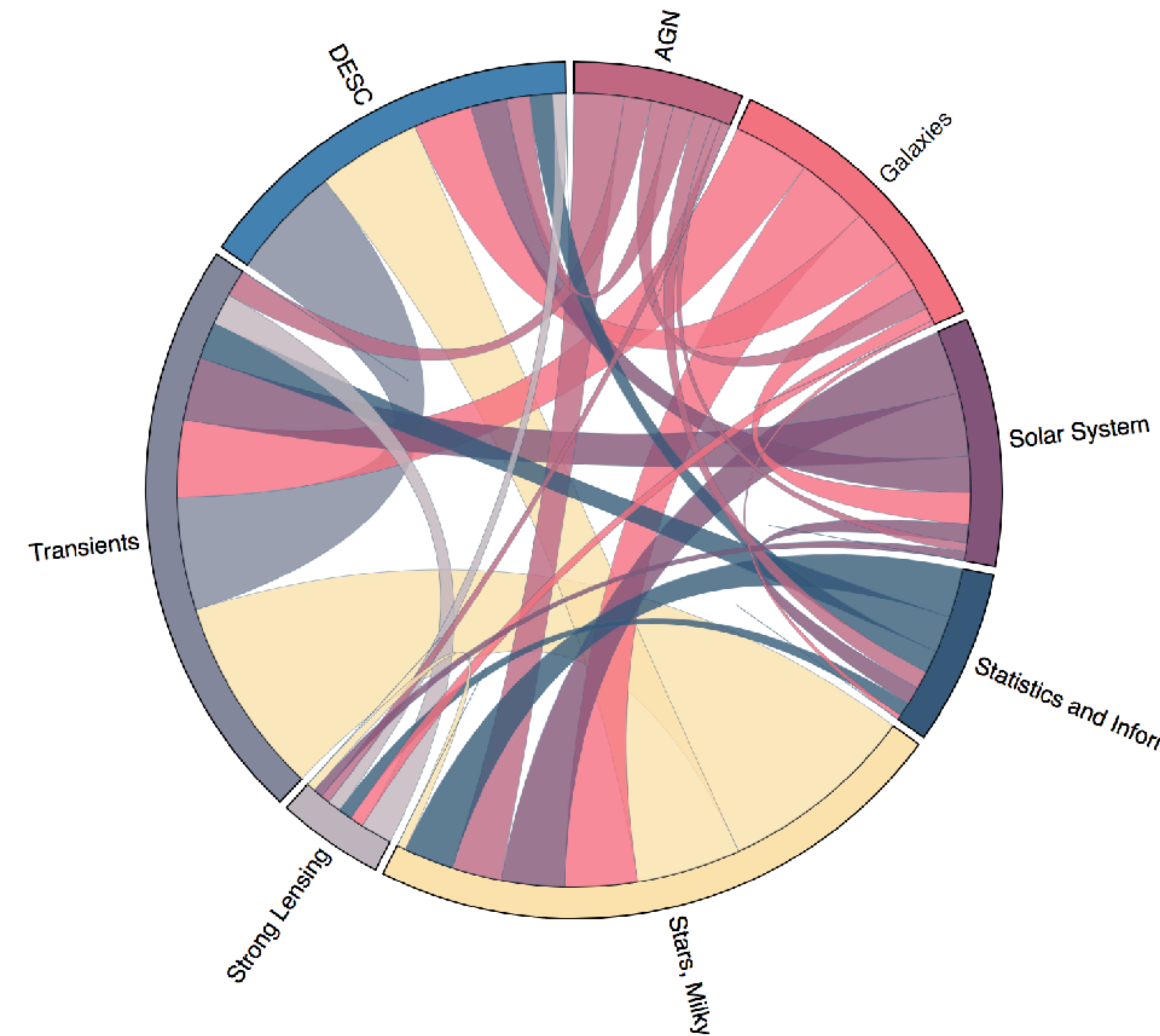
Unconference-Hackathon: June 6-8

Lehigh University, PA

ISSC members on the PennState Astrostats planning + lecture team:

Tom Loredo & Chad Schafer (*ISSC co-chairs*)
Eric Feigelson, Jogesh Babu, Tamas Budavari,
Jessi Cisewski-Kehe

Eric Feigelson: guest lecture at TVS meeting



federica b. bianco

Center for Urban Science and Progress, NYU
Center for Cosmology and Particle Physics, NYU

**LSST Science Collaborations Coordinator,
LSST Transient and Variable Stars Science
Collaborations Co-Chair
LSSTC**

 @fedhere

 fedhere

fbianco@nyu.edu

<https://www.lsstcorporation.org/node/37>