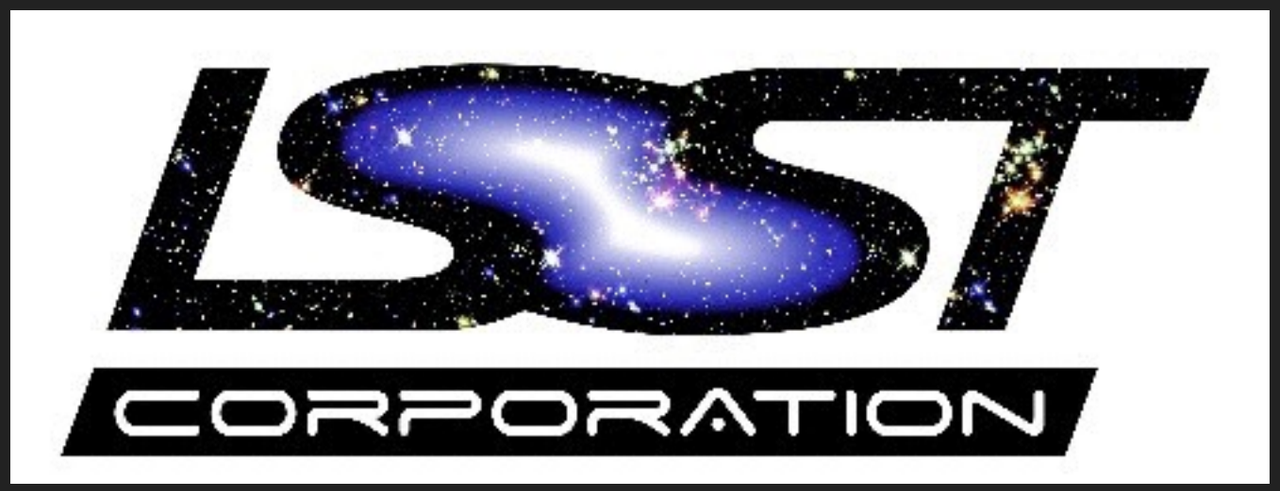


TVS ROADMAP MEETING

24-25 March 2016

Argonne National Laboratory

REIMBURSEMENT

Keep receipts, return them to ANL

(Lauren Raino lraino@anl.gov)

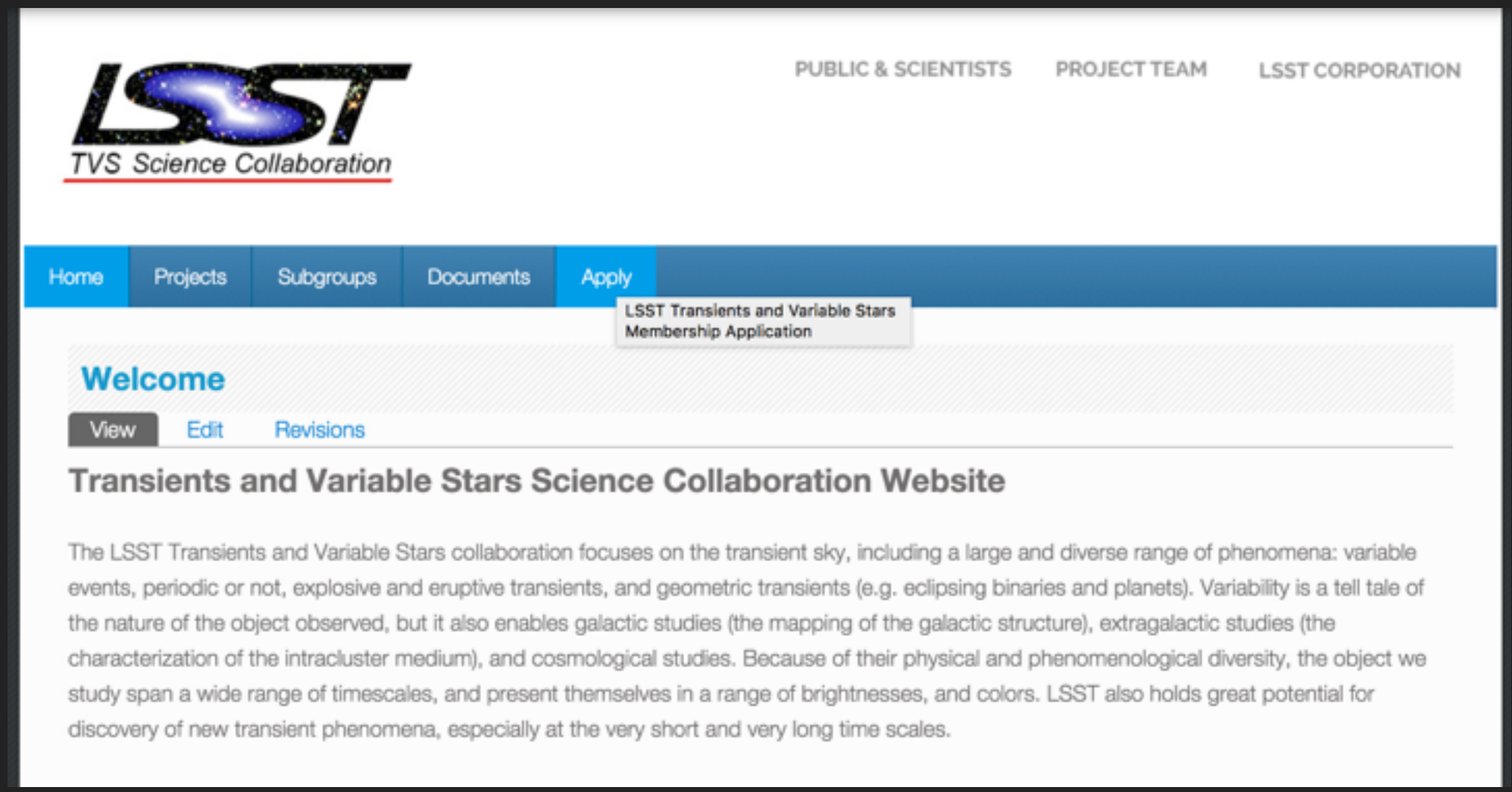
Keep your badge on at all times, remember your ID & Badge (BOTH!) if you leave ANL

Lunch will be served here, dinner on your own

MAKE SURE

you applied and becams a member of the TVS collaboration:

https://tvs.science.lsst.org/home

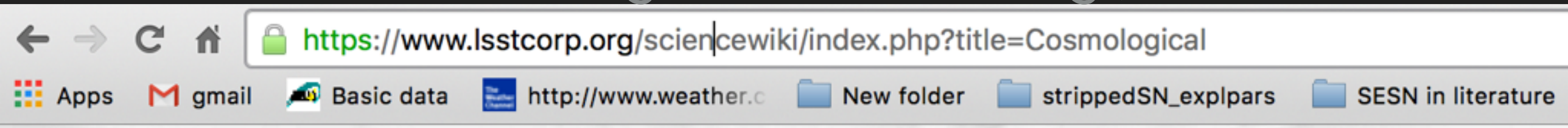


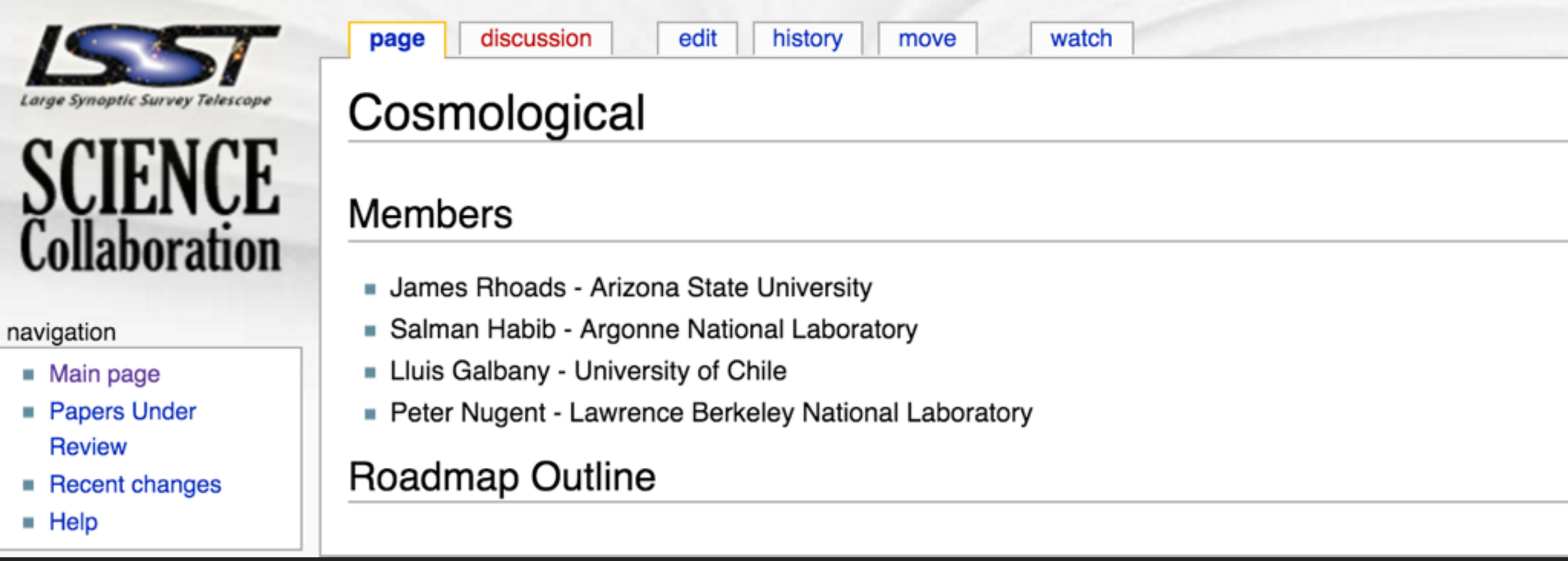
MAKE SURE

you obtained access to the TVS wiki

https://www.lsstcorp.org/sciencewiki/

(contact Iain Goodnow igoodenow@lsst.org)





TIME TABLE

thursday	9:00-9:30	Announcements (this talk)
	9:30-12:30	Subgroup Status presentations
	13:30-15:00	Synergy discussion: envision interaction between subgroups
	15:00-16:00	MAF presentation (Lynne)
	16:15-17:00	First writing session: draft the wiki document

TIME TABLE

friday

9:00-9:30	Cadences description (Lynne)
9:30	working session within/across subgroups
15:00	
15:00-16:00	Subgroup Roadmap presentations (7 min each)
16:00-17:00	additional writing session

DESIGN THE ROADMAP FOR EACH SUBGROUP

LSST Science Collaborations

There are currently ten LSST Science Collaborations. Additional information about their work and membership can be found at the links below or by contacting the individual chairs, or the LSSTC Science Collaborations Coordinator (LSSTCSCC), Lucianne Walkowicz.

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

Lynne Jones (University of Washington); David Trilling (Northern Arizona University);

Dark Energy

Rachel Bean (Cornell University); Jeffrey Newman (University of Pittsburgh);

Active Galactic Nuclei

Niel Brandt (Pennsylvania State University);

Transients/variable stars

Federica Bianco (New York University); Ashish Mahabal (Caltech););

Large-scale structure/baryon oscillations

Eric Gawiser (Rutgers The State University of New Jersey); Shirley Ho (Carnegie Mellon University);

Strong Lensing

Phil Marshall (KIPAC);

Informatics and Statistics

Tom Loredo (Cornell University); Chad Schafer (Carnegie Mellon University);

DESIGN THE ROADMAP FOR EACH SUBGROUP

Home | Projects | Subgroups | Documents | Apply

Home » Subgroups

Subgroups

View | Edit

- Cosmological
- Classification/Characterization
- Distance Scale
- Fast Transients
- Galactic
- Gravitational Waves
- Interacting Binaries
- Magnetically Active Stars
- Microlensing Subgroup
- Multiwavelength Characterization/Counterparts
- Non-degenerate Eruptive Variables
- Pulsating Variables
- Supernovae Subgroup
- Tidal Disruption Events
- Transiting Planets

https://www.lsstcorp.org/sciencewiki/index.php?title=Transiting_Planets

DESIGN THE ROADMAP FOR EACH SUBGROUP

Identify subgroups science drivers.

What can be accomplished in different phases of LSST: commissioning, 1-, 3-, 10-years?

What goals can be achieved with the regular cadence surveys,

what goals require deep-drilling strategy, ToO, special strategies?

Key requirement for each science goals to be achieved

(e.g. surface brightness limits, cadence regularity, filters...)

What support is needed from the LSST organization, including the TVS Chairs,

to clarify the RoadMap and achieve the goals?

Synergy and Friction between subgroups.

What support is needed to facilitate interaction within the subgroup?

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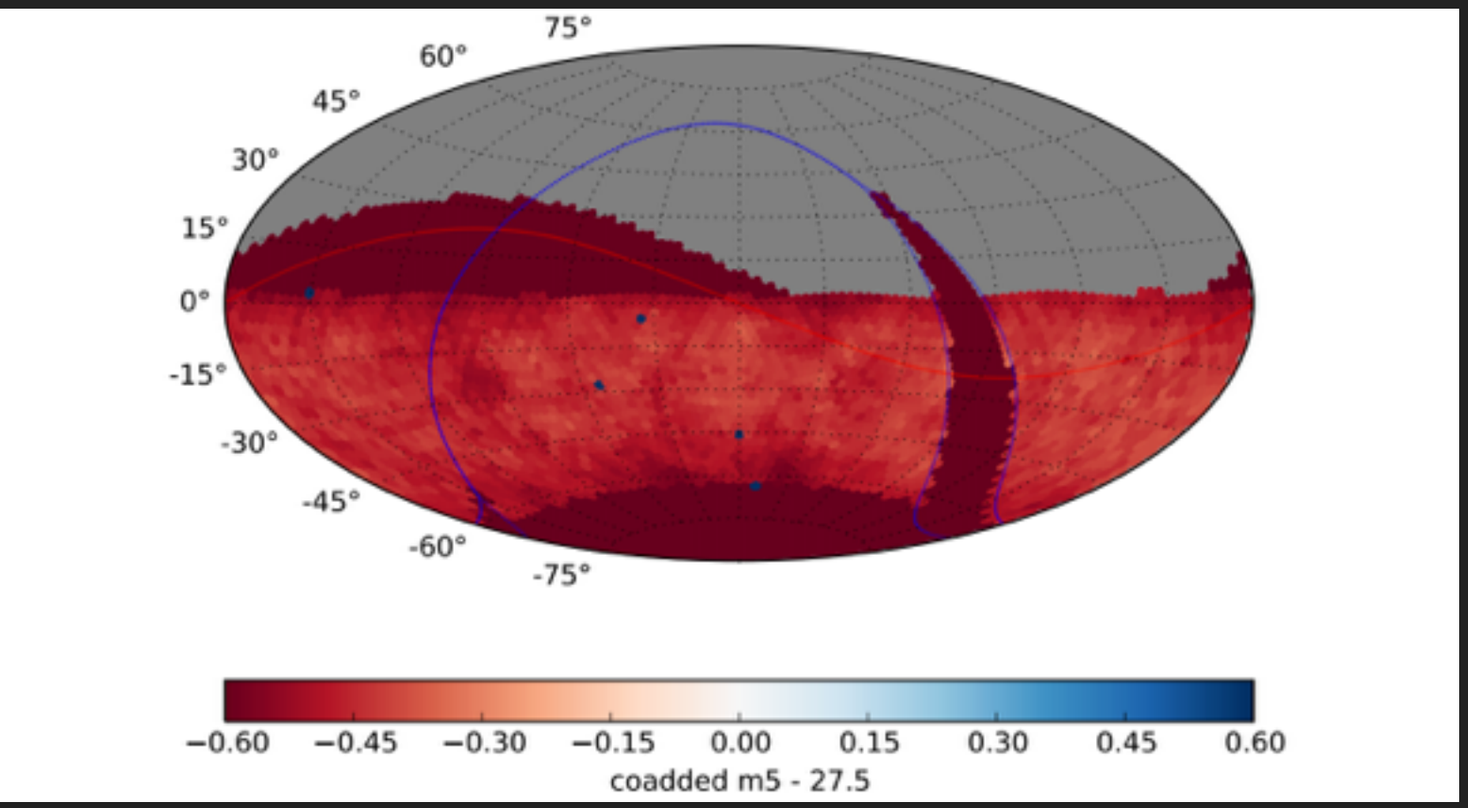

LSST simulates Observing Strategies

DESIGN THE ROADMAP FOR EACH SUBGROUP

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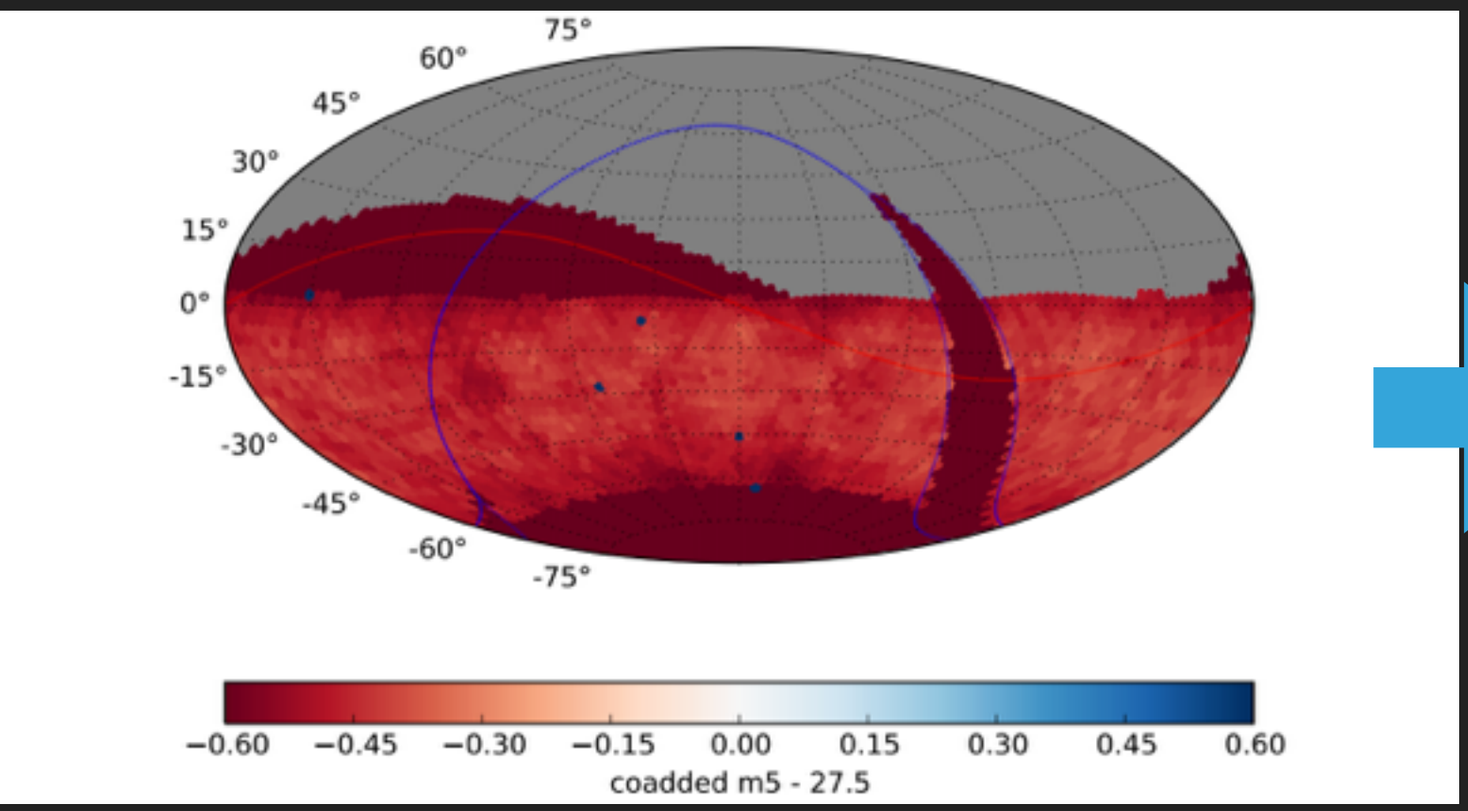

We measure how well we can achieve our science goals with that cadence

LSST simulates Observing Strategies

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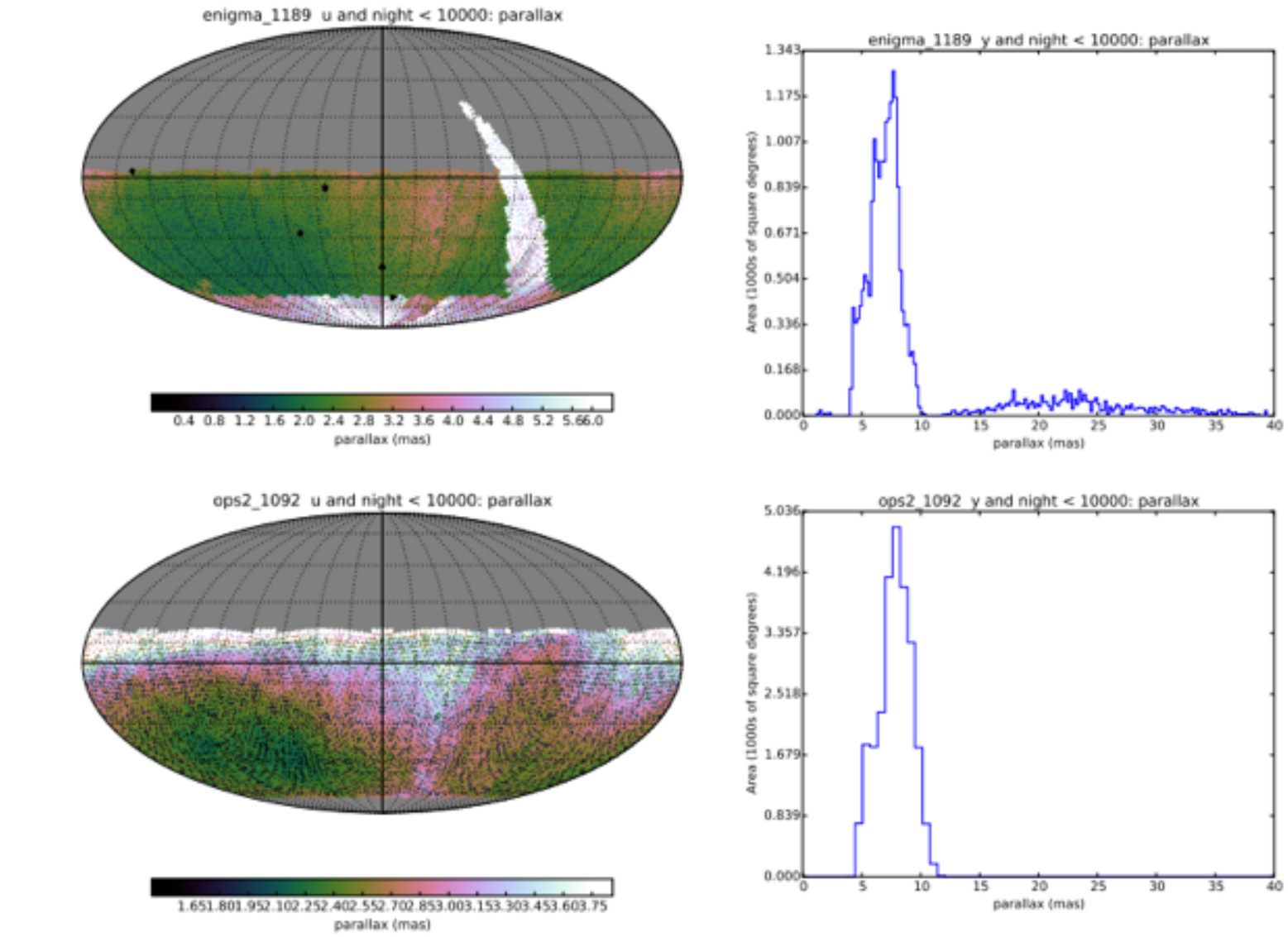

Parallax error for a star at apparent magnitude m = 21.0, assessed over the full survey. Crowding errors are ignored. Top and Third row: OpSim run enigma_1189. Second and bottom row: OpSim run ops2 1092 (PanSTARRS-like cadence).

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LSST measures the merits of a cadence via MAF (Lynne will talk about MAF)

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Even who does not run MAF needs to think of simple metrics to measure cadence:

minimum fraction or number of targets with N measurements in M bands at S SNR within T days

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LSST measures the merits of a cadence via MAF (Lynne will talk about MAF)

In each subgroups at least 1 member should be able to run MAF.

Even who does not run MAF needs to think of simple metrics to measure cadence:

Some cadences weaken a science case, but some can kill a science case! The two cases should be distinguished.

DESIGN THE ROADMAP FOR EACH SUBGROUP

TRANSIENTS <=> CADENCE

OpSim => MAF => FoM

With this program in mind, it makes sense to define *one "Figure of Merit" (FoM) per science project*, that captures the value of the observing strategy under consideration to that science team. This FoM will probably be a function of several "metrics" that quantify lower-level features of the observing sequence. For Figures of Merit to be directly comparable between disparate science projects, they need to be dimensional, and have the same units. One natural choice could be the *information gained* by the science team, in bits. This is a well-defined statistical quantity, albeit not yet one in common use. A given observing schedule's value would then depend on both this information gain, but also *how much that information is worth to the whole community.* It is at this point that the debate could become heated: probably the best we can do in Cadence Diplomacy is to quantify all the information gains implied by each proposed change to the baseline observing strategy, combine them to see whether it makes everyone happy, and iterate. In this way we might hope to minimize the debates about the less quantifiable worth of each piece of information.

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THEN you earn the right to suggest new OpSim experiments

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TOGETHER WE ARE STRONG!

Some phenomenologies are similar, although the science goals differ.

Some transient science can inform other science collaboration (obvious connection: TVS SN and DE SN)

If more of us advocate for similar cadences we have a stronger case.

Where there is friction, do consider how much your science case suffers compared to how much other science cases gain.

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KEEP IN MIND

WHITE PAPER

http://www.slac.stanford.edu/~digel/ObservingStrategy/whitepaper/LSST_Observing_Strategy_White_Paper.pdf

https://github.com/LSSTScienceCollaborations/ObservingStrategy

OIR STUDY

http://www.noao.edu/meetings/lsst-oir-study/

KEEP IN MIND

http://www.slac.stanford.edu/~digel/ObservingStrategy/whitepaper/LSST_Observing_Strategy_White_Paper.pdf

Science-Driven Optimization

of the LSST Observing Strategy

KEEP IN MIND

WHITE PAPER

http://www.slac.stanford.edu/~digel/ObservingStrategy/whitepaper/LSST_Observing_Strategy_White_Paper.pdf

https://github.com/LSSTScienceCollaborations/ObservingStrategy

https://github.com/LSSTScienceCollaborations/ObservingStrategy/blob/master/whitepaper/transients.tex

OIR STUDY

http://www.slac.stanford.edu/~digel/ObservingStrategy/whitepaper/LSST_Observing_Strategy_White_Paper.pdf

http://www.noao.edu/meetings/lsst-oir-study/

KEEP IN MIND

Guidelines for Authors

Phil Marshall

Since this is a community white paper, contributions are welcome from everyone. Read on for how to make a contribution, and how you should structure that contribution.

0.0.1 How to Get Involved

The first thing you should do is read and absorb the current version of the white paper, which you should be able to view on `GitHub`. (You can also download the "raw" PDF, which is hyper-linked for easier navigation.) You will then be able to provide good feedback, which you should do via the `GitHub` issues. Browse the existing issues first: there might be a conversation you can join. New issues are most welcome: we'd like to make this white paper as comprehensive as possible.

To edit the white paper, you'll need to "fork" its repository. You will then be able to edit the paper in your own fork, and when you are ready, submit a "pull request" explaining what you are doing and the new version that you would like to be accepted. It's a good idea to submit this pull request sooner rather than later, because associated with it will be a discussion thread that the writing community can use to discuss your ideas with you. For help getting started with `git` and `GitHub`, please see this handy guide.

KEEP IN MIND

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KEEP IN MIND


Maximizing Science
in the Era of LSST:
A Community-based Study of
Needed US OIR Capabilities

THANK YOU TO OUR ORGANIZERS AND GRACIOUS HOSTS!

The Chairs that planned this meeting: Ashish and Lucianne

Lauren Raino, Salman Habib, ANL!

LSST for the support for the meeting.