TVS ROADMAP MEETING

24-25 March 2016

Argonne National Laboratory

REIMBURSEMENT

Keep receipts, return them to ANL
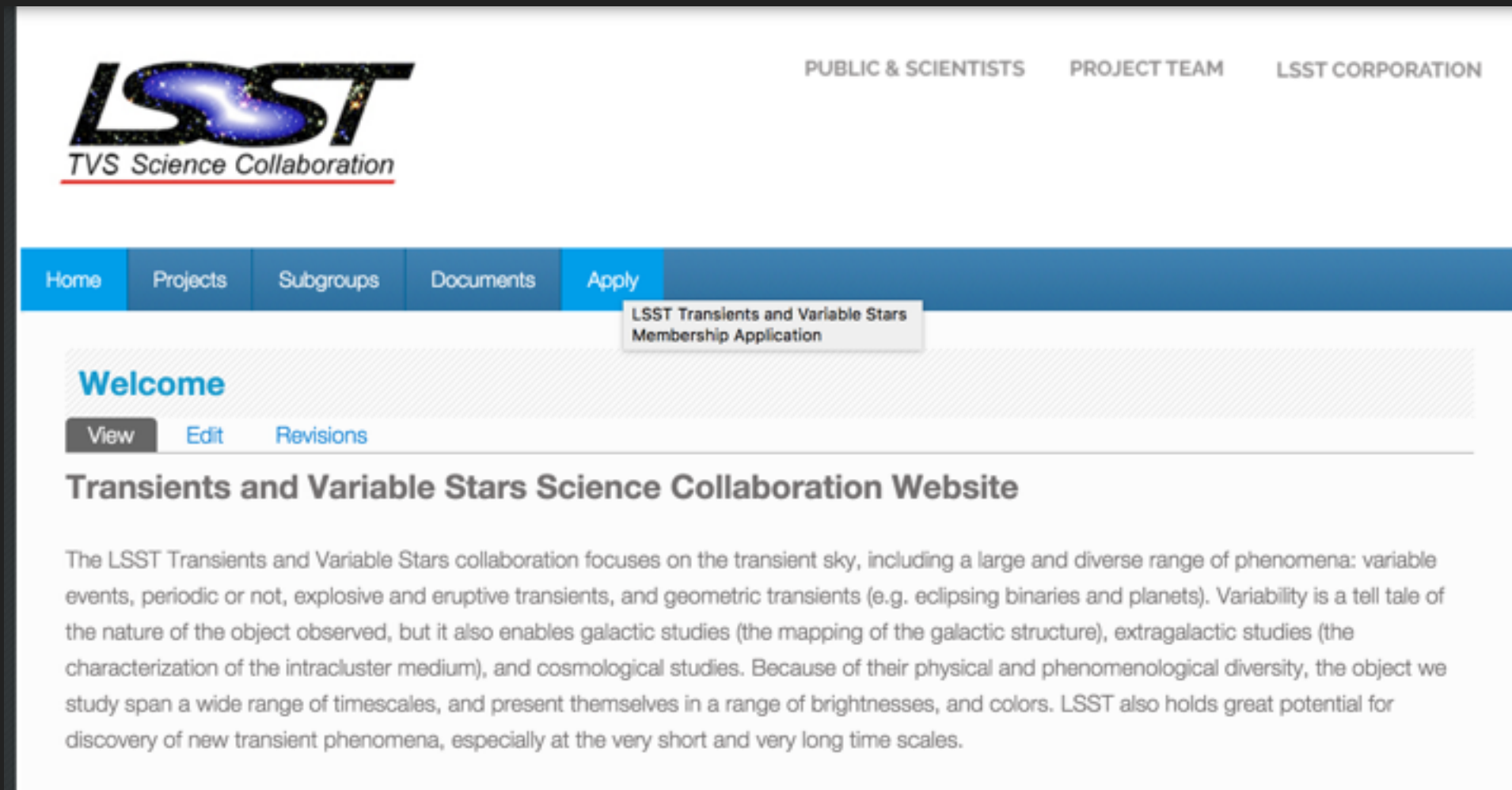
(Lauren Raino lraino@anl.gov)

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)

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

Apps   M gmail   Basic data   http://www.weather.c   New folder   strippedSN_explpars   SESN in literature

LSST
Large Synoptic Survey Telescope

SCIENCE
Collaboration

| page | discussion | edit | history | move | watch |

Cosmological

Members

- James Rhoads - Arizona State University
- Salman Habib - Argonne National Laboratory
- Lluis Galbany - University of Chile
- Peter Nugent - Lawrence Berkeley National Laboratory

Roadmap Outline

navigation

- Main page
- Papers Under Review
- Recent changes
- Help

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 15:00	working session within/across subgroups
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.

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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

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https://github.com/LSSTScienceCollaborations/ObservingStrategy

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

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

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TRANSIENTS <=> CADENCE

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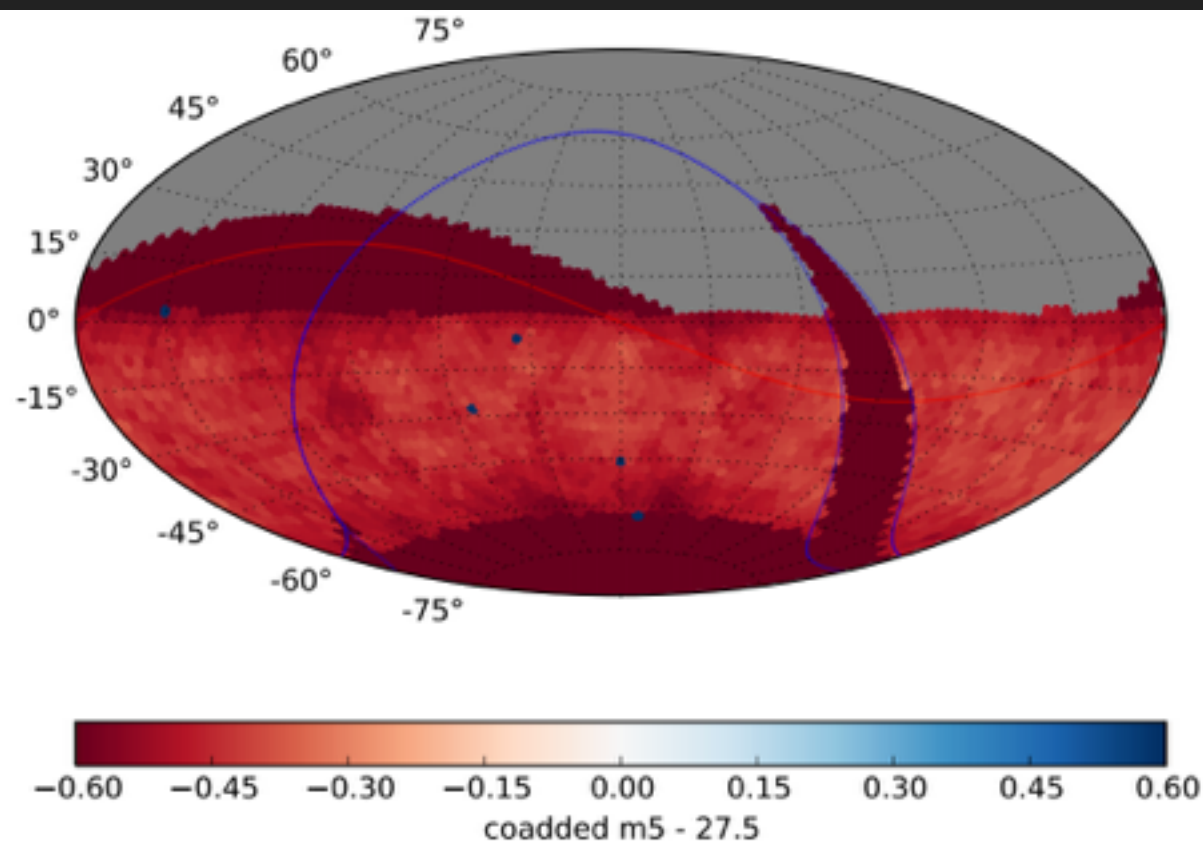
TRANSIENTS <=> CADENCE

LSST simulates Observing Strategies

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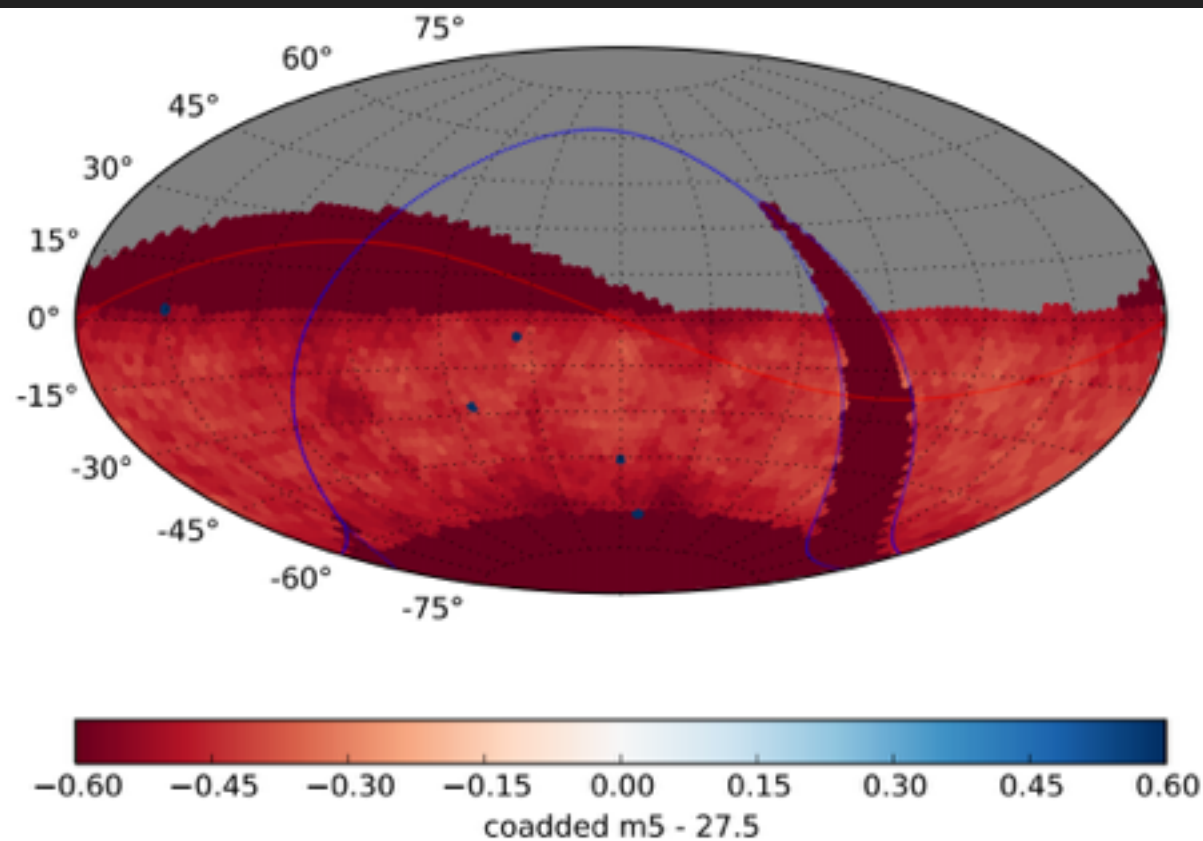
We measure how well we can achieve our science goals with that cadence

LSST simulates Observing Strategies

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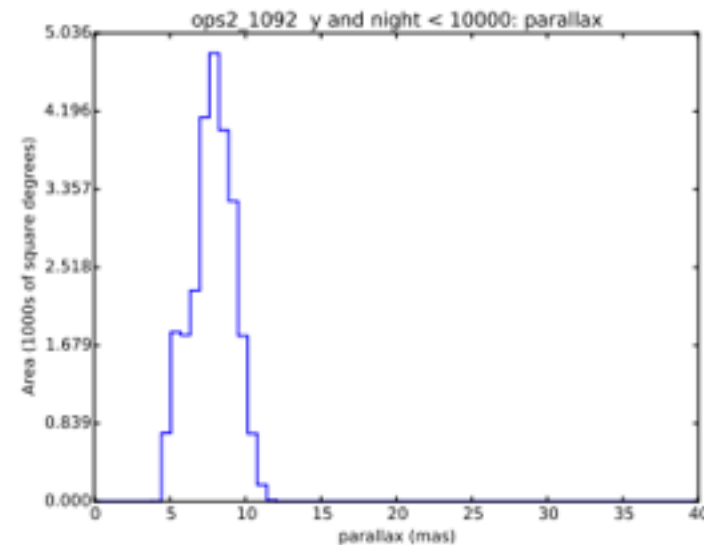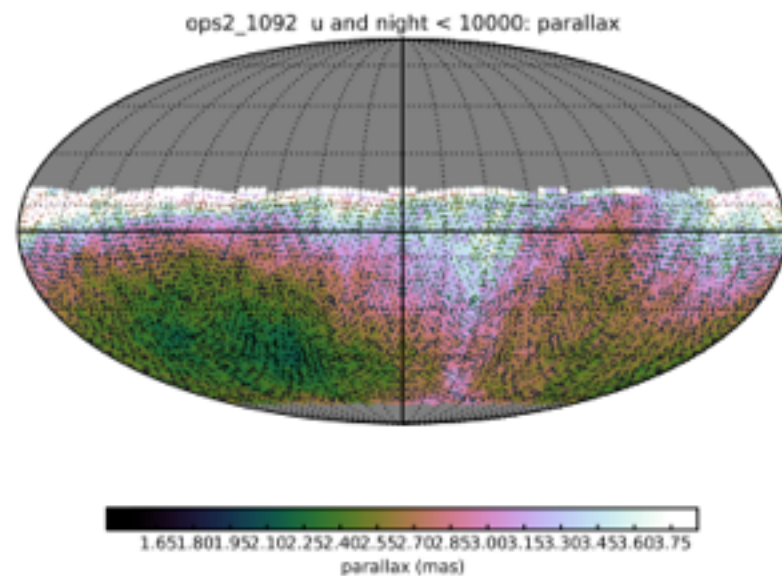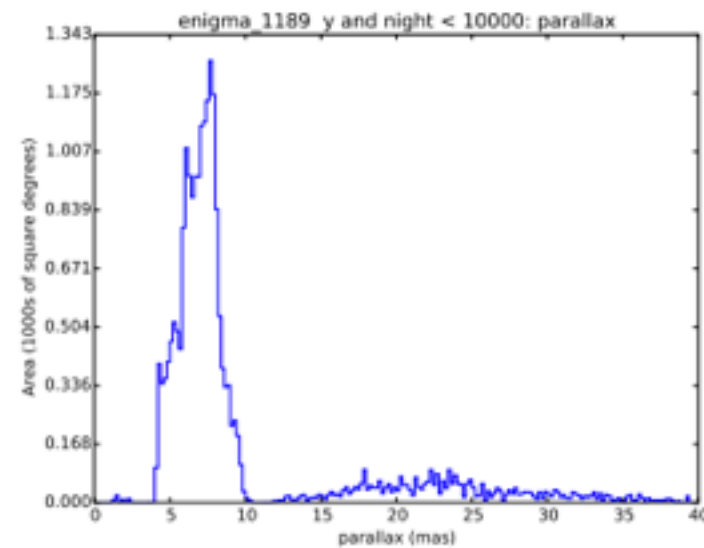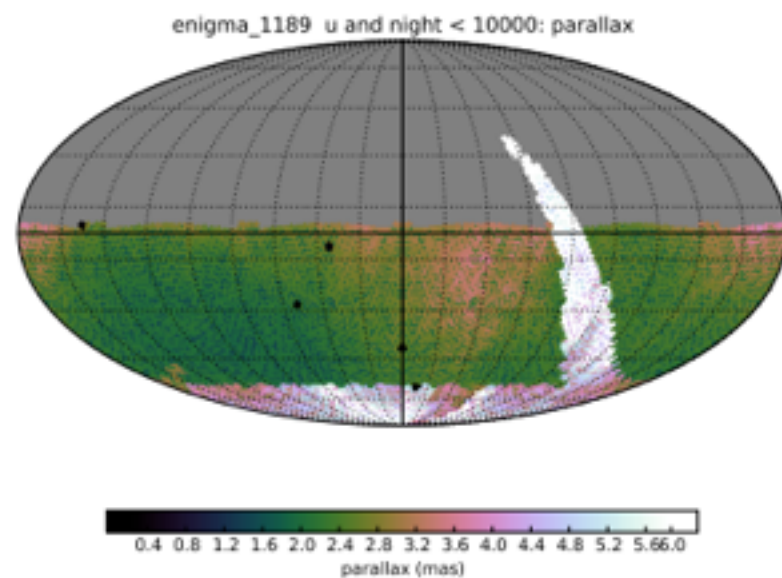
Parallax error for a star at apparent magnitude m = 21.0, assessed over the full survey. Crowding errors are ignored. Top and Third row: OpSim run enigma_1189. Second and bottom row: OpSim run ops2 1092 (PanSTARRS-like cadence).

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lightcurve MAF

http://www.slac.stanford.edu/~digel/ ObservingStrategy/whitepaper/ LSST_Observing_Strategy_White_Paper. pdf SN cosmo chapter
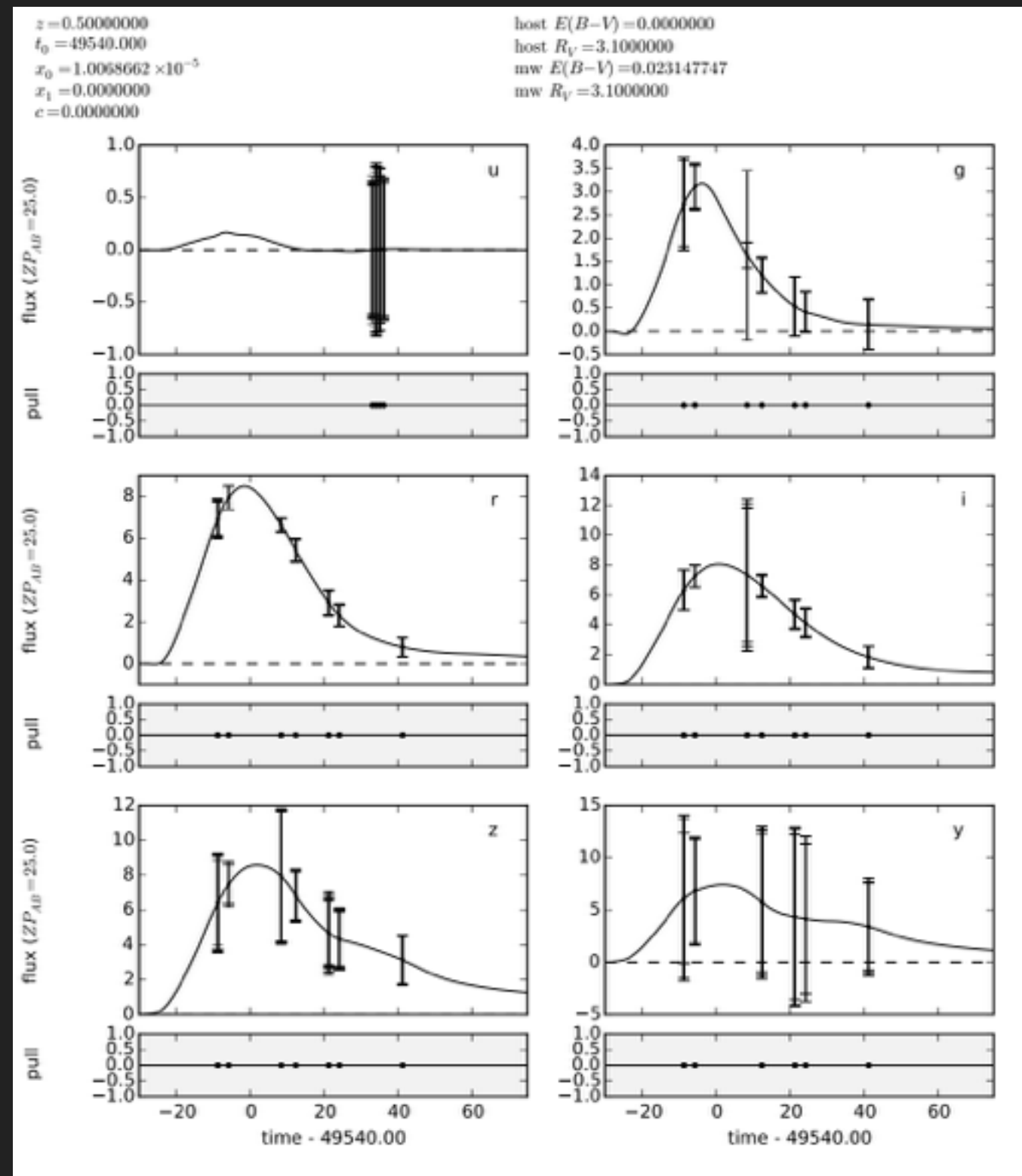
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LSST measures the merits of a cadence via MAF (Lynne will talk about MAF)

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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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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.

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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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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.