LMT Operations Planning

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Overview

- Lessons Learned
- LMT operations objectives
- Summary of critical operations tasks
- US Community Access to the LMT
- Final Thoughts

Lessons Learned

- User support is a full-time job.

- Operating LMT efficiently requires significant training and expertise.

- Communication with the User Community is *really* important

- Our data reduction software must be improved and developed with the end users in mind.

- The telescope is only successful if it is scientifically productive.

Operations Objectives

- Operate LMT in a safe and secure manner.
- Make most efficient use of LMT science observing time
- Make LMT accessible to a broad community, including those not specially trained in millimeter-wave radio astronomy
- Provide all users with calibrated data that have passed quality assurance checks.
- Create a trained user community by providing opportunities for students and astronomers to learn about mm-wave astronomy
- Maintain a high level of communication with the user community

Key Tasks for Science User Support

- Work with our community as they prepare proposals
- Conduct a fair and comprehensive review of the proposals
- Work closely with successful PI teams to prepare for their observations
- Execute the observation queue in a competent and transparent manner
- Carry out standard reductions of data and provide science data product to our users.
- Develop of an archive of LMT observations to serve the scientific community.

US Community Access to the LMT

The new operations model gets a big boost from new grant support to LMT

- New NSF grant to UMass under the Mid-Scale Innovations Program (MSIP)
  - Program will make ½ of UMass's share of LMT observing time (15% of total) to astronomers from any US institution.
  - Time is provided based on competitive review of proposals submitted to the LMT's proposal review.
  - There is no requirement for US-based astronomers to collaborate with astronomers from UMass or Mexico, but we hope that collaborations will increase with access.
- Program highlights:
  - 3-year program corresponding to '20-'21, '21-'22, and '22-'23 observing seasons.
  - $5 million USD total funding.
  - Direct support of operations costs in Mexico.
  - A significant new effort in development of data pipelines, including participation of experts at Univ. of Maryland.

New NSF funding allows a major upgrade in science support for all users.

Final Thoughts

- New NSF support is just one of the ways that NSF is now supporting the LMT to improve the telescope for all users.
  - New Instruments
    - TolTEC – three color camera and polarimeter   (NSF MSIP Program)
    - OMAyA – 16-element 1.3mm heterodyne focal plane array (NSF ATI Program)
    - 230/345 dual-band receiver (NSF MSRI Program)
  - Telescope upgrades to enable daytime observations (NSF MSRI Program)
- With support from Mexico and from the US we have the resources we need to be successful with this plan.

  It will take some time to bring this vision into full reality …
  - We need to get back to the telescope during a pandemic.
  - New personnel need to be hired and trained to take on service roles.

  … but together we can build a productive, national-class observatory.